

Undergraduate Courses 2024

Geography, Environment and Earth Sciences

Te Kura Tātai Aro Whenua



Image: Glacial Valley and Dusk, Tasman Valley, NZ: 2017 Dr Mirjam Schindler

School of Geography, Environment and Earth Sciences

Te Kura Tātai Aro Whenua

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THE BACHELOR OF SCIENCE

Bachelor of Science Degree Requirements

- A total of 360 points
- At least 210 points must be from 200 and 300-level courses, including:
 - At least 150 points must be from courses listed for the BSc
 - At least 75 points must be from 300-level courses listed for the BSc
- 90 points can be from outside Science (some majors also permit an additional 30 outside points)
- At least one Major, and a second Major may be from Science or from any other first degree with a maximum of 150 points permitted from outside Science.

Science Major Requirements

- 45–60 points at 100-level
- 60–80 points at 200-level
- 60 points at 300-level

Science Minor Requirements

- 60 points above 100-level specified in the major, of which
- 15 points must be at 300-level.

THE BACHELOR OF ARTS

Bachelor of Arts Degree Requirements

360 approved points including:

- maximum of 180 points at 100-level
- minimum of 180 points at 200/300 level, including at least 75 points at 300 level
- at least 180 points must be in subjects from Part A of the BA Schedule

PLEASE NOTE

Cancellation of courses

The courses offered by the University and listed in this prospectus may be cancelled by the University because of insufficient resources or student demand, or if other unforeseen circumstances arise.

Timetable changes

Check the timetable for confirmation of course times.

HOW TO USE THIS GUIDE

Course code	Course reference number	Title	Points	Trimester
↓	↓	↓	↓	↓
ESCI 112	CRN 15147	FUNDAMENTALS OF GEOLOGY	15 PTS	2/3

FIELD TRIPS

ESCI 241	Introductory Field Geology	10 pts
ESCI 341	Sedimentary Field Geology	10 pts
ESCI 342	Structural Field Geology	10 pts
ESCI 343	Volcanic Field Geology	10 pts
ESCI 344	Field Geophysics	10 pts
ESCI 349	Earth Sciences - International Field Course	20 pts
GEOG 222	Ecology and Environment	20 pts
GEOG 325	Field Methods	10 pts

Please note:

- Field trips may constitute one entire course or be only a part of it and visit a variety of locations and sites. Extra costs are normally included in the course materials fee. However, students may have to contribute towards the costs for some trips.
- Many field trips have a limited number of places—please apply by **1 December 2023**. Applications for limited entry courses will be waitlisted, and if the course is oversubscribed, decisions on final acceptance will be made based on grades.
- Students must be physically able and must have a good level of physical fitness. Staff must be informed in advance about any known health issues that might be of concern in a field setting.
- Students are required to submit a confidential form providing emergency contact and health information, prior to their full acceptance into the course.
- Students are also expected to have purchased appropriate equipment, ordered through the University’s online payment portal: <https://pay.wgtn.ac.nz/SGEEStransactions/>. These can be collected from the SGEES school office. This equipment may include geological compasses, hand lenses, write-in-the-rain type field notebooks, and geological hammers.
- Students are also expected to have appropriate personal gear including field footwear, waterproof and warm clothing. At 100 level, there may be a very limited amount of outdoor clothing that is available for students to borrow. After 100 level, you need to have access to your own gear, including hiking boots, a sleeping bag, and protective glasses (for safety when rock hammering). Please note that if you do not have suitable field boots you may be declined from attending some field trips and this may result in you failing the course.
- Field trip courses require attendance in person. You will not be able to enroll in these courses if you are a distance student.

YOUR PROGRAMME

Use this template to plan your programme. Start by adding in the core papers for your degree.

Year 1: 120 points

Year 2: 120 points

Year 3: 120 points

DEVELOPMENT STUDIES

Where in the world do gender studies, social movements, Latin America, migration, natural hazards and resources, the Pacific region and globalisation meet? The answer is Development Studies.

Our Development Studies programme is the first major of its kind in New Zealand. It's an umbrella under which you can study almost any aspect of the development of human societies and their relationships to the Earth we live on. This multidisciplinary field is concerned with studying inequalities between people, regions and nations, and the ethical issues that poverty and inequality create. Because Development Studies investigates the world and the people who live here, it encourages you to be confident and tolerant with cross-cultural issues and to analyse and address global problems.

You can take Development Studies as a major in your BA or BSc degree and are encouraged to take this major combined with another in a related discipline such as Cultural Anthropology, Economics, Pacific Studies, Geology, History, Political Science, International Relations, Education, Environmental Studies, Asian Studies, or Māori Studies. Graduates of the Development Studies major gain knowledge and skills to address complexity and contribute to meaningful systemic change in New Zealand or overseas.

REQUIREMENTS FOR MAJOR

- GEOG 112, 212, 312, 316
- Five further approved courses with significant relevance to development studies and/or development studies content, comprising:
 - one regional-based course and one subject-based course at 100 level*
 - one regional-based course and one subject-based course at 200 level*
 - one course at 300 level.

* Visit www.wgtn.ac.nz/development-studies for a list of courses.

ENVIRONMENTAL SCIENCE

Environmental Science is a major offered across the sciences, drawing on the extensive expertise of staff both in the Faculty of Science at Te Herenga Waka—Victoria University of Wellington, and the wider Wellington science community. Graduates of the Environmental Science major will have obtained one of the highest quality BSc degrees available as they will have the opportunity to combine a physical, biological, and mathematical or earth sciences major with the Environmental Science major.

REQUIREMENTS FOR MAJOR

Programme requirements:

- must be linked to a partner major from another BSc subject
- undertake a 300-level supervised independent research project (ENSC 302 or 303)
- undertake a 300-level taught course (ENSC 301) on a variety of environmental science topics that will allow students to link their partner major to an environment science context.

Specific major requirements are:

- STAT 193; 15 points from MATH courses, and 30 further points from 100-level BIOL, CHEM, ESCI, GEOG, MATH, PHYS, and STAT
- GEOG 214; at least 40 points in 200-level BIOL, CHEM, ESCI, GEOG, MATH, PHYS and STAT in addition to that required by the partner major
- ENSC 301; ENSC 302 or 303; further approved 300-level points to achieve at least 60 points.

***Note:** with approval, up to 30 points may be shared at 200-level with the partner major.

ENVIRONMENTAL STUDIES

At their core, all environmental issues are social issues. Social science approaches allow us to understand the underlying causes and develop solutions to tricky environmental problems.

Our major in Environmental Studies enables you to examine environmental problems and solutions through a variety of disciplines. By the end of your degree, you will have the chance to develop excellent written and oral presentation skills, skills in conducting independent inquiry into environmental issues, and deep understanding of the complexity of nature and society in Aotearoa New Zealand and globally.

REQUIREMENTS FOR MAJOR

- GEOG 112, 114; STAT 193 or QUAN 102; one of (ESCI 111, MAOR 123, PUBL 113, POLS 111)
- GEOG 214, MAOR 216; 20 further 200-level GEOG points
- GEOG 314; at least 40 300-level points from (GEOG, SCIS, MAOR 301, PUBL 307)

Visit www.wgtn.ac.nz/bsc for a list of courses.

GEOGRAPHY

Geography contributes to understanding and addressing the problems of our time through systematic, spatial, and critical analysis. It brings vital insights about the influence of place, space, and power into key issues facing the world today such as urbanisation, climate change, migration, globalisation, gender inequality, Indigenous rights, sustainability, and diversity.

Depending on your interests, you can take Geography as a major in a BA or a BSc degree and your study can follow one of five themes: Environmental Geography, Development Geography, Human Geography, Physical Geography, or Geographic Information Science (GIS), or integrate them all.

This major enables senior undergraduate students to get a taste of postgraduate study and to generate workplace-ready skills through participation in a research team supported by leading academics. This experience makes our graduates highly employable in a range of fields and professions.

REQUIREMENTS FOR MAJOR

- ESCI 111, GEOG 112, 114; STAT 193 or equivalent
- GEOG 215, 217; one of (212, 214, 216, 222)
- GEOG 324, 325; 40 further 300-level GEOG points of which at least 20 points must be from (GEOG 312–316, 322)

GEOLOGY

Earthquakes, mountain building, volcanic eruptions, dinosaurs, climate change, resources and the origin and evolution of life: all in a day's work for the geologist. Wellington is a natural laboratory for geologists. You can study the effects of shifting tectonic plates in a city that is built above a major plate boundary.

Antarctica, the conservation and use of natural resources, the evaluation of natural hazards and the social and environmental effects of global change can also be studied as part of this BSc major. Both science and non-science students will find value in the 100-level ESCI courses.

Geology at Victoria University of Wellington is about understanding our world and the forces that shape it. Graduates gather the techniques and the problem-solving abilities, the confidence, and the leadership skills to embark upon careers in a diverse range of industries.

REQUIREMENTS FOR MAJOR

- ESCI 111, 112; 15 points from ENGR 121-142, or any 100-level MATH/PHYS/QUAN/STAT; 15 further 100-level points from (CHEM 113-122, ENGR 121-142, MATH 141-177, PHYS, STAT 193)
- ESCI 202, 203, 204, 241
- ESCI 301, 302, 341, 342; ESCI 303 or 305

GEOPHYSICS

Geophysics offers the chance to combine a love of the outdoors with expertise in mathematics, physics, and computer science to explore the atmosphere around us and the ground beneath our feet. Geophysicists work at understanding some of the biggest and most exciting physical phenomena we know—things like earthquakes, volcanoes, mountain building, the Earth's magnetism, gravity, and the deep structure of New Zealand.

You can specialise in two areas: up in the sky with Meteorology, the science of weather; or down inside the Earth studying Solid Earth Geophysics. Geophysics is a BSc major where you'll use mathematical techniques to understand natural forces and to probe the Earth's interior and atmosphere.

REQUIREMENTS FOR MAJOR

Geophysics (Meteorology):

- ESCI 111 or 112; (MATH 142, 151 or ENGR 121, 122); (PHYS 101, 142 or ENGR 141, 142); one of (COMP 102, 112, 132)
- 30 points from (ENGR 222, 200-level MATH, not including MATH 261); 30 points from 200-level PHYS
- MATH 322, 323; 30 further 300-level points from (DATA, MATH, PHYS)

Geophysics (Solid Earth):

- ESCI 112; (MATH 142, 151 or ENGR 121, 122); (PHYS 101, 142 or PHYS 101, 131; or ENGR 141, 142); one of (COMP 102, 112, 132)
- ESCI 203, 15 points from 200-level PHYS; at least 30 further 200-level points from (DATA 202, ENGR 222, ESCI 241, MATH (not including MATH 261), PHYS)
- ESCI 305, 344, MATH 323; 15 further 300-level points from ESCI, MATH or PHYS

PHYSICAL GEOGRAPHY

Physical geography is the study of the Earth's surface features and processes. It aims to explain the geographic pattern of landforms, soils, vegetation, hydrology, coasts, and climate by understanding processes that work at the surface of the Earth.

Our University offers New Zealand's only undergraduate major and postgraduate degrees in Physical Geography. The major focuses on understanding the evolution and processes driving alpine, glacier, hill-slope, river and climate systems. An extensive field and laboratory programme occurs in combination with lectures.

This major enables senior undergraduate students to get a taste of postgraduate study and to generate workplace-ready skills through participation in a research team supported by leading academics. This experience makes our graduates highly employable in a range of fields and professions.

REQUIREMENTS FOR MAJOR

- ESCI 111, GEOG 114, one of (ESCI 112, GEOG 112), 15 MATH, PHYS, QUAN or STAT points
- GEOG 222; two of (GEOG 215, 220, 224)
- GEOG 324, 325; two of (GEOG 318, 319, 321)

100-LEVEL COURSES

Course Code	Course Registration Number	Course Name	Points	Trimester Available
ESCI 111	CRN 9469	THE EARTH SYSTEM: UNDERSTANDING OUR DYNAMIC EARTH AND ENVIRONMENT	15 PTS	T1

Restrictions: GEOG 111
 Course Coordinator: Dr Cliff Atkins

ESCI 111 gives a broad introduction to understanding the Earth System and how humans interact with it. Covering deep time, evolution of life, composition and structure of the planet, natural hazards, atmosphere and ocean circulation, water resources, landscape evolution, ice and climate change, ESCI 111 provides a fundamental knowledge base to better understand and manage our environment and plan for the future. This course includes lectures and laboratories, as well as a field trip to observe and understand the processes which shape Wellington's landscape. ESCI 111 is a platform for further study in Earth Sciences at Victoria University of Wellington. This course provides the foundation for higher level courses in Physical Geography and Earth Sciences and is a core paper for many of the majors in the School (Geography, Physical Geography, Geology, Geophysics and Environmental Studies).

ESCI 112	CRN 15147	EARTH SCIENCE FOR A CHANGING PLANET	15 PTS	T2
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Course Coordinator: Prof James Crampton

ESCI 112 introduces students to Earth science. The course gives students key understanding of the study of global change, both anthropogenic and natural, of the history of life and the biosphere, of biogeochemical cycles that maintain the planet's life-support systems, of natural resources including water and the precious metals that are used in mobile phones and wind turbines, and of natural hazards such as earthquakes, volcanic eruptions, and coastal erosion. The course ranges from the global scale of plate tectonics (continental drift) to the minute scale of rocks and minerals viewed under a microscope. Practical work is a key part of the course and, in particular, students go into the field and learn how to read the landscape, interpret Earth history, and make a geological map.

ESCI 132	CRN 9062	ANTARCTICA: UNFREEZING THE CONTINENT	15 PTS	T2
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Course Coordinator: Dr Cliff Atkins

A broad introduction to the Antarctic continent. Topics covered include: history of exploration of the continent; Antarctica's role as a recorder of past climate change and its importance in any future change in climate; the geological history of Antarctica and the development of the ice sheets; life on the continent and surrounding oceans; and key environmental issues facing Antarctica today.

GEOG 112	CRN 1651	INTRODUCTION TO HUMAN GEOGRAPHY AND DEVELOPMENT	15 PTS	T2
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Course Coordinator: Dr Polly Stupples

An introduction to the main themes, concepts, and debates in Human Geography and Development Studies, drawing on case studies from the main world regions, particularly Oceania, Latin America, the Asia-Pacific region, and New Zealand's place within it. Students are introduced to cross-cutting concepts in Human Geography and Development Studies, and to the key approaches of Social and Cultural Geography, Urban and Rural Geography, Migration Geography, and Development Geography. GEOG 112 is a compulsory course for all majors in Geography, Development Studies, Physical Geography and Environmental Studies.

GEOG 114	CRN 7021	ENVIRONMENT AND RESOURCES: THE FOUNDATIONS	15 PTS	T1
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Restriction:

ENVI 114

Course Coordinator:

Dr Wokje Abrahamse

This course integrates the physical, social, economic, and political factors associated with environmental change. First, the course introduces the earth systems associated with environmental change (both natural and human induced). Second, the course explores the social, political and economic implications of contemporary environmental issues and human-environment relations.

200-LEVEL COURSES

ESCI 201	CRN 11341	CLIMATE CHANGE AND NEW ZEALAND'S FUTURE	20 PTS	T3
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Prerequisites: 30 points
 Course Coordinator: Dr Lauren Vargo

This course provides a summary of current knowledge on climate change, its evidence and uncertainties, and climate prediction into the century. It discusses the influence of climate change on Aotearoa New Zealand's society, economy and environment, and governmental strategies for adaptation and mitigation.

ESCI 202	CRN 15137	SEDIMENTOLOGY AND PALAEOLOGY	20 PTS	T1
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Prerequisites: ESCI 111, 112; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent
 Course Coordinator: TBA

An introduction to features of sedimentary strata and fossils that form the basis for interpreting the geological history of a region from field observations and drill cores. The laboratory sessions introduce techniques used to analyse and interpret sediments, strata and fossils such as flow channel studies, grain size analysis, fossil description, and biostratigraphy. Two field trips give students experience in describing sedimentary strata and collecting fossils for laboratory analysis.

ESCI 203	CRN 15141	EARTH STRUCTURES AND DEFORMATION	20 PTS	T1
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Prerequisites: ESCI 111, 112; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent
 Course Coordinator: Prof John Townend

An introduction to the fields of structural geology, tectonics, and solid earth geophysics with the goal of describing the structure of the Earth and the mechanisms by which it deforms. The laboratory component emphasizes modern field-based methods of collecting, processing, and analysing geological and geophysical data.

ESCI 204	CRN 15138	PETROLOGY AND MICROSCOPY	20 PTS	T2
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Prerequisites: ESCI 111, 112; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent
 Course Coordinator: TBC

This course examines all common major rock types and introduces crystallography as it pertains to optical mineralogy, with examples of a variety of common minerals and rocks in hand sample and under the microscope. The course covers the origins of common minerals and rocks and the conditions and processes that form them.

ESCI 241	CRN 17287	INTRODUCTORY FIELD GEOLOGY	10 PTS	T1
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Prerequisites: ESCI 111, 112; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent

Field trip: You need to select one of three one-week field trips (depending on demand). Refer to online Course Finder for dates.

Course Coordinator: Dene Carroll

This course is an introduction to field techniques in geology. The field trip is based at the Geology Department's field station at Onekaka, near Takaka, northwest Nelson. Students record data from outcrop sequences, prepare geological maps, cross-sections and stratigraphic columns of the area studied, and interpret the geological history of the region.

GEOG 212	CRN 6002	WORLDS OF DEVELOPMENT	20 PTS	T1
Prerequisite:		GEOG 112 or approved course		
Course Coordinator:		Prof Warwick Murray		

An introduction to ideas, strategies and impacts of development from a global and geographical perspective. The course focuses on the concept of development and analyses the spatial patterns of global inequality. Processes of change in East Asia, Latin America, the Pacific Islands and Africa are compared and analysed.

GEOG 214	CRN 6004	ENVIRONMENT AND RESOURCES: NEW ZEALAND PERSPECTIVES	20 PTS	T2
Prerequisites:		GEOG 114, ESCI 111 or 30 approved points		
Restriction:		ENVI 214		
Course Coordinator:		Dr Billy van Uitregt		

The aim of the course is to examine the major environmental issues and challenges Aotearoa New Zealand faces today. The course will highlight the policy and management frameworks that are in place to address these environmental issues. Students will also critically appraise how well current employed policy and management mechanisms achieve the goal of environmental sustainability. Tutorial sessions provide hands-on experience in examining current environmental issues in Aotearoa New Zealand.

GEOG 215	CRN 6005	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND SCIENCE	20 PTS	T2
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Prerequisite:	60 100-level points
Restriction:	GEOG 415
Course Coordinator:	Dr Mairead de Roiste

GIS is a powerful tool and approach which can be used to investigate geographic phenomena and apply geographic knowledge to solve problems. Correct application of GIS depends on a sound knowledge of theory and principles. This course lays the theoretical foundations and concentrates on the basic principles of GIS. We review current applications of GIS with invited speakers from government, business, and academia. The course also has a strong practical component with a series of labs that progress from guided tutorials to more open-ended problem-solving exercises which test and develop students' understanding of the concepts and creative problem-solving ability. While this course does not require advanced computer skills, all the coursework is computer based.

Students with a wide range of interests will gain from this course. GIS is a useful tool in many areas such as archaeology, business, conservation, development, ecology, landscape design and planning. Computer scientists, information managers and statisticians will also find that GIS provides an opportunity to specialize in a growing field.

GEOG 217	CRN 26056	HUMAN GEOGRAPHY: APPROACHING OUR WORLD	20 PTS	T2
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Prerequisites:	GEOG 112; GEOG 114 or 15 approved 100-level points
Course Coordinator:	Dr Mirjam Schindler

This course explores the evolution of human geography and its relevance to local and global issues. We explore and compare different human geography approaches to our world and apply them to various spheres of life (e.g., society, economics, environment). Students will be introduced to key ideas, concepts, and thinkers of human geography over time.

GEOG 220	CRN 17169	HYDROLOGY AND CLIMATE	20 PTS	T2
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Prerequisites: ESCI 111, GEOG 114, 15 100-level MATH or STAT points
 Course Coordinator: Dr Kyle Clem

This course provides the skills and training necessary to explore and understand the core hydrological and climatic processes that cause change within the environment, particularly the role of water. It will help you to understand why climate varies spatially, and why vegetation has such an important influence on the availability and timing of moisture and stream flow. It will also examine how hydrological and climatic systems respond to human interaction and environmental change. The emphasis will be on providing the skills necessary to interpret the processes controlling the spatial and temporal variability in climate and water availability.

GEOG 222	CRN 26059	ECOLOGY AND ENVIRONMENT	20 PTS	T1
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Prerequisites: STAT 193, 30 points from (BIOL 111, 113, 114, 132, GEOG 114, ESCI 111, ESCI 112)
 Restriction: BIOL/ENVI 222
 Course Coordinator: Dr Andrew Rees

An introduction to ecology and environmental science. The course focuses on physical and biological processes in terrestrial environments. The field trip will introduce techniques relevant to field-based enquiry in geography, ecological and environmental science. Also taught as BIOL 222.

GEOG 224	CRN 26054	GEOMORPHOLOGY	20 PTS	T1
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Prerequisites: ESCI 111, 15 pts from (MATH 132-177, PHYS 131, STAT 193, STAT 292)
 Course Coordinator: A/Prof Kevin Norton

This course introduces the student to the field of geomorphology. Modern geomorphology is concerned with the ways in which processes interact with each other and the landforms that they create and destroy. We will approach geomorphic systems from their roles in shaping planetary surfaces. This will include general introductions to the roles of wind, water, ice, and gravity. Examples and exercises will be drawn from both terrestrial and extra-terrestrial planetary surfaces.

300-LEVEL COURSES

ENSC 301	CRN 18345	TOPICS IN ENVIRONMENTAL SCIENCE	20 PTS	T1
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Prerequisite: 90 points of 200-level study in approved subjects from the Science schedule

Corequisites: ENSC 302 or 303; admission to the major in Environmental Science

Course Coordinator: Dr Dan Sinclair

Topics in environmental science that may include: energy supply and effects, Antarctica and environmental change, environmental toxicology, greenhouse effect environmental risk assessment, mathematical modelling of environmental problems, human health and ecology, atmosphere and ocean dynamics and natural resource management. This course will allow students to integrate their science discipline into an environmental framework and discuss, analyse, and apply these ideas.

ENSC 302	CRN 18346	DIRECTED INDIVIDUAL STUDY	20 PTS	T2
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Prerequisite: Permission of Head of School

Assessment: 100% internal

Course Coordinator: Dr Andrew Rees and Dr Dan Sinclair

ENSC 303	CRN 18347	DIRECTED INDIVIDUAL STUDY	15 PTS	
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Prerequisite: Permission of Head of School

Assessment: 100% internal

Not offered in 2023.

ESCI 301	CRN 15139	GLOBAL CHANGE: EARTH PROCESSES AND HISTORY	20 PTS	T1
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Prerequisites: ESCI 202; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141-177, PHYS 101-131, 142-145, STAT 193.

Course Coordinator: Gavin Dunbar

A study of the modern and past Earth environments and the key processes that have shaped them. This course focuses on understanding and interpreting evidence from the geological record for environmental change and how this knowledge is used to help predict future variability, with specific focus on Antarctica, the Southwest Pacific Ocean, and New Zealand.

ESCI 302	CRN 15145	TECTONICS AND STRUCTURAL GEOLOGY	20 PTS	T2
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Prerequisites: ESCI 203; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141-177, PHYS 101-131, 142-145, STAT 193.

Course Coordinator: Dr Carolyn Boulton

An introduction to the fundamental concepts, principles and methods in global tectonics and structural geology. The laboratory part of the course emphasizes practical methods of structural analysis and interpretation based on outcrop, rock mechanics, geophysical, and remote sensing data sets. It includes two all-day field trips.

ESCI 303	CRN 15140	PETROLOGY AND GEOCHEMISTRY	20 PTS	T2
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Prerequisites: ESCI 204; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-131, 142-145, STAT 193.

Course Coordinator: Dr Raimundo Brahm

The course introduces fundamental concepts, principles and methods in geochemistry and the application of geochemical tools to geochronology, igneous, metamorphic rocks, and processes. The formation, classification and geochemical behaviour of elements, isotopes, and analytical methods in geochemistry. The application of geochemical tools is examined, and the principles of geochronology applied.

ESCI 305	CRN 15146	ENVIRONMENTAL AND APPLIED GEOPHYSICS	20 PTS	T1
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Prerequisites: ESCI 112 or 203; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-131, 142-145, STAT 193.

Course Coordinator: Prof Martha Savage

This course covers the use of geophysical data acquisition, processing, and interpretation for exploring the Earth's interior, especially on a small regional scale. Topics will include gravity, electrical and magnetic surveying and the fields of simple bodies, refraction seismology, an introduction to reflection survey data interpretation, the use of GPS for surveying and geodesy, and the use of surface waves for determination of shear wave velocities for engineering and seismic hazard purposes.

ESCI 341	CRN 15144 CRN 28413	SEDIMENTARY FIELD GEOLOGY	10 PTS	T1
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Prerequisites: ESCI 202, 241; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-145, STAT 193

Field trip: You must select one of two one-week field trips in February (depending on demand). Refer to online Course Finder for dates.

Course Coordinator: Dr Cliff Atkins

The rolling hills beyond Martinborough are an ideal introduction to geological field mapping and stratigraphy. The grassy landscape hides a gently deformed late Cenozoic sedimentary sequence ranging from marine mudstone through limestone to terrestrial fluvial conglomerate and mudstone. Through a series of group field exercises and independent work, students learn how to conduct a traverse taking detailed outcrop descriptions, and use these to assemble a geological map, stratigraphic column, and cross-section of the area. These form the basis of a brief report on the geological history of the area.

Note: Fieldwork is a basic and fundamental part of the training of a geologist, but in exceptional cases, field course requirement(s) may be waived, and alternative courses substituted, with approval of the Head of School.

ESCI 342	CRN 15142	STRUCTURAL FIELD GEOLOGY	10 PTS	T1
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Prerequisites: ESCI 202, 203, 241; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-145, STAT 193

Field trip: You need to select one of two one-week field trips over the month of February (depending on demand). Refer to online Course Finder for dates.

Course Coordinator: Dr Carolyn Boulton

Field mapping and analysis of geological structures, including folds, thrusts, and active strike-slip faults. Students measure structural data, produce maps, and draw cross-sections of Kekerengu, an area on the Kaikōura coast that provides a dramatic window into the tectonic evolution of Aotearoa New Zealand's landmass over the last 100 million years. Measurements and observations form the basis of a report on the structural history of this fascinating field area.

Note: Fieldwork is a basic and fundamental part of the training of a geologist, but in exceptional cases, field course requirement(s) may be waived, and alternative courses substituted, with the approval of the Head of School.

ESCI 343	CRN 17289	VOLCANIC FIELD GEOLOGY	10 PTS	T3
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Prerequisites: ESCI 204, 241; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-131, 142-145, STAT 193.

Field trip: The field trip will be held in late November or early December (depending on year). Refer to online Course Finder for dates.

Course Coordinator: Prof Colin Wilson

This course is designed to give students an introduction to volcanology and outlines how volcanic products can be used to investigate volcanic eruptions and processes. The trip involves field work around Tongariro National Park and Lake Taupō, where students will investigate different styles of eruptions (lava flows and pyroclastic deposits), and three different styles of volcano (scoria cones, composite volcanoes, caldera volcanoes). The course involves hiking the majority of the Tongariro crossing and requires suitable levels of fitness and equipment. Accommodation is based in Whakapapa village and all assessment is completed by the end of the trip.

ESCI 344	CRN 17288	FIELD GEOPHYSICS	10 PTS	T1
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Prerequisites: ESCI 112 or 203; 15 pts from ENGR 121-142 or any 100-level MATH, PHYS, QUAN, STAT or approved equivalent 15 further pts from CHEM 113-122, ENGR 121-123, MATH 141–177, PHYS 101-131, 142-145, STAT 193

Corequisite: ESCI 305

Field trip: The field trip complements ESCI 305. It is held in the mid-trimester break during Trimester 1 (depending on demand). Refer to online Course Finder for dates.

Course Coordinators: Prof Tim Stern/Prof Martha Savage

This course introduces the techniques of geophysical data acquisition, processing, and geological interpretation, including gravity surveying, refraction seismology, reflection survey data interpretation, and resistivity and magnetic surveys. The course involves at least 4 days in the field followed by 2 days of analysis back in the geophysics lab.

ESCI 349	CRN 23186	EARTH SCIENCES - INTERNATIONAL FIELD COURSE	20 PTS	
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Prerequisites: 60 pts of 200-level ESCI or GEOG, including either ESCI 241

Restriction: ESCI 449

Field trip: This is an entirely field-based course run overseas. Refer to online Course Finder for dates.

Costs: An extra fee beyond that for a 20-point (undergraduate) course will apply. All associated costs for the course (travel, food, and accommodation) will need to be met by the student.

Course Coordinator: Dr Warren Dickinson

Please note: This course is only offered every two years and the next offering will be in 2023 (TBC). The course is offered on the condition that students must have a current passport and fulfill all necessary visa requirements. It requires a minimum number of students to run and if that critical threshold is not achieved the course will be cancelled.

This course is an intensive field-based overview to key overseas earth science locations where academic staff have familiarity, experience, and research knowledge. The course location is likely to vary from year-to-year depending on the availability of staff and on student interest. The students will be expected to perform several field-based exercises which will be internally assessed. Differential UG & PG research reports (also internally assessed) will be directly related to the course location and associated fieldtrip.

GEOG 312	CRN 6009	RACE, GENDER AND DEVELOPMENT	20 PTS	T2
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Prerequisite: GEOG 212, 20 further GEOG 200-level points or 40 approved 200-level points

Course Coordinator: Prof Sara Kindon

This course explores the relationships between differently raced, sexed, and gendered people and development around the world using contemporary ideas from feminist/cultural geography, mātauranga Māori and development studies. We consider the ongoing issues of (post)colonialism and power within development practice which seeks to make the world a more equitable place.

GEOG 313	CRN 18579	GEOGRAPHIES OF NEW ZEALAND	20 PTS	T3
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Prerequisite: 20 200-level GEOG points, or approved courses for non GEOG majors

Restriction: GEOG 311

Field trip: This course runs over three weeks. The first two weeks will consist of lectures, followed in the third week by a field trip in January 2023. Refer to online Course Finder for dates.

Course Coordinator: Dr Richard Willis

GEOG 313 studies human geographies of New Zealand, including demography, historical geography, political economy, economic geography, industrial geography, rural geography, social geography, and urban geography, in both historical and contemporary settings. For final year students it will advance their knowledge of contemporary geographical processes in the New Zealand environment. For foreign, exchange or graduate students it will give them an advanced introduction to geographical context of the country in which they are studying.

GEOG 314	CRN 6011	ADVANCED ENVIRONMENT AND RESOURCES: GLOBAL ISSUES	20 PTS	T2
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Prerequisite: GEOG 214
 Restriction: ENVI 314
 Course Coordinator: Dr Amanda Thomas

The course is underpinned by an understanding that different disciplines frame environmental problems through their own particular lens. This lens has a role in the kinds of solutions that are proposed for the problem. These disciplinary lenses sometimes conceive of and value 'environment', 'nature' and what constitutes legitimate 'knowledge' differently.

Knowledge about human interaction with the 'environment' and 'nature' is therefore highly politicised. Drawing on these foundations, the course explores environmental challenges through a variety of disciplinary lenses that are commonly used to critically analyse the complexity of human induced environmental change.

GEOG 315	CRN 6012	ADVANCED GEOGRAPHIC INFORMATION SYSTEMS (GIS)	20 PTS	T2
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Prerequisites: GEOG 215, 20 further approved 200-level points
 Course Coordinator: Prof David O'Sullivan

This course looks at the more advanced aspects of geographic information systems (GIS). There is a particular emphasis on open-source tools and on approaches to doing geospatial analysis in code using *R* as these are becoming increasingly important in science and other workplace settings. The major assessment component of the class is a mini-project exercise which gives students an opportunity to explore methods and topics of interest to themselves, and also to develop confidence exploring and present results from the analysis of spatial data using a modern literate programming approach. It is expected that students will have completed GEOG215, or an introductory course in GIS at another institution.

GEOG 316	CRN 6013	GEOGRAPHIES OF GLOBALISATION	20 PTS	T1
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Prerequisites: (GEOG 212, 20 further GEOG 200-level points) or 40 approved 200-level points
 Field trip: A half-day field trip in Wellington (date TBC)
 Course Coordinator: Prof Warwick Murray

An analysis of the nature and impacts of globalisation from a geographical perspective. This course questions the concept of globalisation and focuses on the economic, cultural, and environmental implications of the process in both developed and developing countries.

GEOG 319	CRN 7518	APPLIED GEOMORPHOLOGY	20 PTS	T1
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Prerequisites: GEOG 224, one of (GEOG 220, BIOL/GEOG 222); 15 points from MATH 132-177, PHYS 131 or STAT 193 (or equivalent)
 Field trip: Mandatory 2-day weekend field trip early in the trimester (dates TBC)
 Course Coordinator: A/Prof Kevin Norton

This course will explore the operations and, where appropriate, the management of key landform systems. The course provides a detailed synthesis of the physical processes and linkages operating at the earth's surface that shape our landscape and physical environment. These processes will be explored through a range of topics that may include the geomorphology of coasts, tectonic regions, glacial environments, and fluvial systems.

GEOG 321	CRN 26057	ICE AND CLIMATE	20 PTS	T2
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Prerequisites: GEOG 220, one of (BIOL/GEOG 222, GEOG 224); 15 points from MATH 132 -177, PHYS 131 or STAT 193 (or equivalent)

Course Coordinator: Dr Shaun Eaves

An overview of the climate system and the cryosphere, focusing on interactions between the two, covering (1) comprehensive treatment of climate processes over the 2000 years leading into the modern era of anthropogenic influence; (2) case studies of ice-climate interactions; recent behaviour of ice sheets, mountain glaciers and sea ice.

GEOG 322	CRN 31090	ISLANDS AND OCEANS: PEOPLE, POWER AND PLACE	20 PTS	T1
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Prerequisite: 40 200-level points from ANTH, DEVE, ENVI, GEOG, MAOR, PASI or POLS

Course Coordinator: Dr Polly Stupples

This course examines a range of issues relevant to island and ocean geographies in (post) colonial contexts – such as climate change, forced migration, militarization, waste and pollution, the blue economy – through relevant geographic theories including material geographies, political geographies, more-than-human geographies, and feminist geographies. In doing so, it builds on geographic concepts of region, scale, scarcity, boundaries, marginality, and identity. Case studies will largely be drawn from the wider Pacific region, including Aotearoa/New Zealand.

GEOG 324	CRN 26058	RESEARCH DESIGN	10 PTS	T1
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Prerequisites: 40 ENVI or GEOG 200-level points (or 40 approved 200-level points); STAT 193 or equivalent

Course Coordinator: Prof Sara Kindon and Dr Jamie Howarth

This is a practical and professionally oriented course. It imparts some of the excitement and value of different approaches to research design across all aspects of Geography (physical and human). With the support of lectures and laboratory exercises and discussions, students learn about how to ask relevant research questions, develop appropriate research designs, integrate different methods, consider ethics, and practice project management. Building communication skills, students work in teams to develop and present a group research proposal for a project (to be carried out in GEOG 325).

GEOG 325	CRN 26055	FIELD METHODS	10 PTS	T2
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Prerequisites: GEOG 324

Field trip: Participation is a mandatory requirement of this course as fieldtrips and fieldwork take place in different sites according to the students' project proposals developed in GEOG 324. Most fieldtrips and fieldwork take place within the first 2-4 weeks of Trimester 2.

Course Coordinator: Dr Jamie Howarth and Dr Mirjam Schindler

The course builds directly on GEOG 324 to enable students to carry out team-based research using relevant field methods in particular sites, to analyse the data they generate and to present their findings. It exposes students to a range of field methods and their application and provides a strong foundation for more independent research at postgraduate level.

Please note that the course is field based with students pursuing their own fieldwork under the guidance and mentorship of academic staff and postgraduate tutors. There are also some scheduled classroom sessions focusing on data analysis and presentation.

WHO TO CONTACT

Student Success Team, Te Wāhanga Pūtaiao—Faculty of Science:

Address: Level 1, Cotton Building
Phone: 0800 04 04 04
Email: info@vuw.ac.nz
Website: www.wgtn.ac.nz/science/student-success
Hours: 9 am–4 pm Monday, Wednesday, Thursday, Friday
9.30 am–4 pm Tuesday

The Tītoko—Centre for Student Success team offers a range of services that cover all student-related matters from applications and enrolment to graduation.

Johan Barnard	Manager, Student Success	04 463 5980
Polly Stupples	Associate Dean (Undergraduate Students)	04 463 6793

Āwhina | Māori student support

Address: Room 133, Cotton Building, Kelburn Parade. 04 463 9546
Email: awhina@vuw.ac.nz
Web: www.wgtn.ac.nz/awhina

Āwhina is the on-campus whānau for Māori students to work together to share knowledge, achieve academic success, and build strong communities and leaders.

At Āwhina, our kaupapa (goal) is to help students successfully transition from secondary education or work into tertiary education, and to provide academic support for Māori students enrolled at the University. Our experienced staff offer one-to-one advising and mentoring sessions, tutorials, study wānanga, and a range of workshops to help you achieve your study goals. Our culturally inclusive environment includes whānau rooms with computer facilities, study areas, kitchen facilities, and space to meet with peers or tuākana (older students).

STAFF CONTACTS

		ROOM	CONTACT
Head of School	A/Prof Monica Handler	309	463 5391
Deputy Head of School (Programmes)	A/Prof Kevin Norton	202	463 6993
UNDERGRADUATE COORDINATORS			
Development Studies	Dr Marcela Palomino-Schalscha	211	463 5029
Environmental Studies	Dr Wokje Abrahamse	203	463 5217
Environmental Sciences	Dr Andrew Rees	214	463 8396
Human Geography	Dr Polly Stupples	208	463 6793
Geology	Prof Rupert Sutherland	527	463 6422
Geophysics	Prof Martha Savage	529	463 5961
Geographic Information Science (GIS)	A/Prof Mairéad de Róiste	215	463 6431
Physical Geography	A/Prof Kevin Norton	202	463 6993
POSTGRADUATE COORDINATORS			
Development Studies	Prof Sara Kindon	213	463 6194
Environmental Studies	Dr Amanda Thomas	212	463 6153
Environmental Sciences	Dr Andrew Rees	214	463 8396
Geographic Information Science	A/Prof Mairéad de Róiste	215	463 6431
Geology/Earth Sciences	Prof Colin Wilson	411	463 9510
Geophysics	Prof Martha Savage	529	463 5961
Human Geography	Prof Sara Kindon	213	463 6194
Physical Geography	Dr Shaun Eaves	521	463 5176
Meteorology	Prof James Renwick	309	463 4719
Climate Change Science & Policy	Dr Alex Lo	128	463 5058
SCHOOL ADMINISTRATORS			
School Manager	Belinda Behle	310	463 5345
Programmes Administrator	Jana Venter	311	887 4010
Administrator - Operations	Meena Swartzel	311	887 3806

ACADEMIC STAFF

Title	First Name	Surname	Research Interests	Room	Tel No
Dr	Wokje	Abrahamse	Environmental studies, human dimensions of environmental issues, behaviour change, urban sustainability	203	463 5217
Dr	Cliff	Atkins	Sedimentary processes and environments, Antarctic glacial geology	302c	463 6143
Dr	Carolyn	Boulton	Faults, fluid-rock interaction, friction, structural geology, earthquake cycle, earthquake-simulation experiments	226	463 8369
Mr	Dene	Carroll	Earth sciences	302c	463 5932
Dr	Calum	Chamberlain	Geophysics, observational seismology, fault mechanics, tectonics, time-series analysis, earthquake physics	526	463 5112
Dr	Kyle	Clem	Climate dynamics, Southern Hemisphere climate change, tropical-polar teleconnections, climate modelling	206	463 5642
Prof	James	Crampton	Biodiversity history, mollusc taxonomy, morphometrics, traditional and quantitative biostratigraphy, cretaceous stratigraphy, basin evolution and history of New Zealand	214	463 8396
A/Prof	Mairéad	de Róiste	Public participation GIS, usability, GIS, geovisualization, capability building, pedagogy	215	463 6431
Dr	Shaun	Eaves	Geomorphology, Quaternary climate change, glacial palaeoclimatic reconstruction	521	463 5176
A/Prof	Monica	Handler	Geochemistry, mantle processes, volcanic rocks, Earth formation	509	463 5391
Dr	Jamie	Howarth	Earthquake behavior and hazards, storm frequency, mountain systems	224	463 5071
Prof	Sara	Kindon	Social and development geography, participatory visual and creative research, gender, refugee resettlement, Indigenous worldviews	213	463 6194
A/Prof	Simon	Lamb	Structural geology and tectonics	525	463 6428
Prof	Warwick	Murray	Social/economic geography of development, globalisation, Latin America, Oceania, Asia-Pacific	211	463 5029
Prof	Rewi	Newnham	Quaternary climate and environmental change, palynology and vegetation history	200	463 5279
A/Prof	Kevin	Norton	Geomorphology	202	463 6993
Prof	David	O'Sullivan	Urban geography, spatial analysis, modelling and visualization, geospatial technologies		463 6492
Dr	Marcela	Palomino-Schalscha	Social cultural geography, post-development and postcolonial approaches, diverse and solidarity economies, tourism and its connections to development and environmental issues, political ecology, Latin America, Indigenous knowledges and rights	203	463 5899

Prof	James	Renwick	Climate; climate variability, climate change, climate modelling, climate prediction, New Zealand climate, El Niño-Southern Oscillation (ENSO), teleconnections, atmospheric blocking, Antarctic Sea ice, multivariate statistical analysis	309	463 4719
Dr	Andrew	Rees	Environmental science, environmental monitoring, quantitative paleoecology, environmental reconstruction	214	463 8396
Prof	Martha	Savage	Seismology and its relation to tectonics, volcanoes, earthquake hazards and geothermal energy	529	463 5961
Dr	Mirjam	Schindler	Urban geography/modelling	204	463 5645
Dr	Ian	Schipper	Igneous petrology and volcanology	415	463 8197
Dr	Dan	Sinclair	Environmental geochemistry, paleoclimatology, paleoceanography, rapid climate change during the last glacial, geochemistry of carbonates, speleothems and corals, biomineralization	419	463 9755
Prof	Tim	Stern	Exploration geophysics and tectonics, crust and mantle structure of the Earth	526	463 5112
Dr	Polly	Stupples	Social and cultural geography, development studies, creative practice and the creative economy, sustainability, waste, gender	225	463 6793
Prof	Rupert	Sutherland	Global-scale tectonic process and crustal-scale tectonic processes	527	463 6422
Dr	Amanda	Thomas	Democracy, environmental democracy, political ecology, gender, class and ethnicity	201	463 6117
Prof	John	Townend	Fault mechanics and tectonophysics	528	463 5411
Dr	Vincent (Billy)	van Uitregt	Indigenous voices, worldviews and knowledges in contemporary environmental science, policy and governance	205	463 6119
Prof	Colin	Wilson	Field, chemical and physical volcanology, supervolcanoes, pyroclastic deposits, volcano-tectonics, geothermal geology	411	463 9510

ANTARCTIC RESEARCH CENTRE

Dr	Brian	Anderson	Senior Research Fellow	521	463 5176
A/Prof	Nancy	Bertler	Antarctic Science Platform Director	519	463 6196
Dr	Ruzica	Dadic	Senior Research Fellow	510	463 6199
Dr	Warren	Dickinson	Senior Research Fellow	510	463 6199
Ms	Michelle	Dow	Centre Manager	512	463 6587
Dr	Gavin	Dunbar	Senior Lecturer	518	463 6123
Dr	Bella	Duncan	Postdoctoral Fellow	507	463 5493
Dr	Shaun	Eaves	Lecturer in Physical Geography	521	463 5176
Prof	Nick	Golledge	Associate Professor	509	463 9592
Dr	Huw	Horgan	Senior Lecturer	520	463 6918
A/Prof	Richard	Levy	Associate Professor	519	463 6196
Mr	Darcy	Mandeno	Field and Operations Engineer	513	463 9662
A/Prof	Rob	McKay	Director	508	463 6836
Prof	Tim	Naish	Professor in Earth Sciences	506	463 6197
Mrs	Dao	Polsiri	Administrator & NZ SeaRise Programme	512	463 6587

CLIMATE CHANGE RESEARCH INSTITUTE

Dr	Judy	Lawrence	Senior Research Fellow	129	463 5474
Dr	Alex	Lo	Senior Lecturer	128	463 5058

POSTDOCTORAL FELLOWS

Dr	Simon	Barker	Volcanology, geochemistry, petrology	505	463 4042
Dr	Raimundo	Brahm	Igneous geochemistry	417	
Dr	Jenni	Hopkins	Volcanic geochemistry	416	463 5814
Dr	Finnigan	Illsley-Kemp	Volcano geodynamics	505	463 4042

TECHNICAL STAFF

Mr	Aleksandr	Beliaev	Computing Systems Administrator	502	463 6470
Dr	Bruce	Charlier	Geochemistry Lab Manager	408	463 5865
MS	Jane	Chewings	Senior Technical Officer	319	463 6192
Mr	Frans	Gerber	Geochemistry Facilities Technician	414	463 6127
		TBC	Technician – Petrology	319	463 9479
Mr	Kosta	Tashkoff	Manager Technical Services	307	463 6013
Mr	Dez	Tessler	Technician – Field Support	318	463 6512
		TBC	Technician – Geophysics	318	463 6512
Ms	Ningsheng	Wang	Senior Technical Officer	414	463 6127

EMERITUS PROFESSORS

E/Prof	David	Bibby	Nuclear energy
E/Prof	Michael	Crozier	Physical geography
E/Prof	John	Gamble	Petrology and volcanology
E/Prof	Tim	Little	Tectonics, structural geology, deformational processes
E/Prof	Phil	Morrison	Economic geography, labour market geography, urban growth and development
E/Prof	John	Overton	Development studies, theories of development, land tenure, rural transformation
E/Prof	Ray	Watters	Latin America, uplands of China

In most cases, staff emails are firstname.lastname@vuw.ac.nz

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