

Undergraduate courses 2024

Biological Sciences



Image: Tuatara (*Sphenodon punctatus*) from Takapourewa/Stephens Island. Credit: Susan Keall

School of Biological Sciences

Te Kura Mātauranga Koiora

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Updated 23rd August 2023

THE BACHELOR OF SCIENCE (BSc)

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 from courses listed for the BSc
 - At least 75 points from 300-level courses listed for the BSc
- 90 points can be from outside science (some combinations of majors may also permit up to an additional 60 outside points).
- One major from the BSc. Students can also take a second major, which can be from the BSc or any other first degree of the University

Science Minor Requirements

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

PLANNING YOUR PROGRAMME

Use this template to plan your programme. Start by adding in the core papers for your degree. Note that generally 100-level courses in Science are 15 points, but that at 200- and 300-level there is a mix of 15- and 20-point courses.

Year 1: 120 points

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Year 2: 120 points

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Year 3: 120 points

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UNDERGRADUATE PROGRAMME DIRECTORS

If you have any questions, and/or need some advice on planning your programme, please feel free to contact the appropriate Programme Director from the list below.

Biology	A/Prof Monica Gerth	Monica.Gerth@vuw.ac.nz
Biomedical Science	A/Prof Davide Comoletti	Davide.Comoletti@vuw.ac.nz
Biotechnology	Prof David Ackerley	David.Ackerley@vuw.ac.nz
Cell and Molecular Bioscience	A/Prof Bronwyn Kivell	Bronwyn.Kivell@vuw.ac.nz
Ecology and Biodiversity	Prof Phil Lester	Phil.Lester@vuw.ac.nz
Marine Biology	Prof James Bell	James.Bell@vuw.ac.nz

MAJORS IN THE BACHELOR OF SCIENCE (BSc)

BIOLOGY (BIOL)

Mātai Koiora

A Biology major introduces you to the wonder of life, in all its forms and at all levels from molecules to ecosystems. The major begins with courses that introduce cell, plant and animal biology. During your second and third years, you'll be able to follow your passion and choose courses that span the spectrum of biological disciplines. You can also combine elements of other majors for a more flexible and broader degree. A major in Biology serves as a foundation for broad and diverse career options. There are also pathways for postgraduate study and further specialisation – although if you think you might want to continue your studies, make sure you include the prerequisite courses for entry into your postgraduate programme of interest.

MAJOR REQUIREMENTS

- BIOL 111, 113, 114, STAT 193 (or equivalent)
- 60 points from BIOL/BMSC/BTEC 201–299
- 60 points from BIOL/BMSC/BTEC 301–399.

An example programme of study for an undergraduate Biology major is shown below, which also meets the entry requirements for our Cell and Molecular Bioscience (CBIO) and our Molecular Microbiology (MBIO) postgraduate programmes.

If you have any questions and/or need course advice, please feel free to contact the Biology Programme Director, Dr Monica Gerth (monica.gerth@vuw.ac.nz).

Example programme of study

(required courses for the Biology major are highlighted in bold).

	Year 1	Year 2	Year 3
T1	BIOL 113: Biology of Plants BIOL114: Biology of Animals BTEC101: Introduction to Biotechnology CHEM121: Chemistry of life	BIOL244: Introductory Biochemistry BIOL228: Animal Diversity BIOL252: Cell & Developmental Biology	BIOL340: Genes and Genomes BIOL325: Global Change Biology BMSC301: Medical Microbiology
T2	BIOL111: Cell Biology BMSC117: Biology of Disease BIOL132: Biodiversity and Conservation STAT193: Statistics in Practice	BIOL236: Microbes & their Environments BIOL241: Genetics BTEC201: Molecular Biotechnology	BIOL329: Evolution BMSC334: Cell and Immunobiology BMSC339: Cellular Regulation

BIOTECHNOLOGY (BTEC)

Hangarau Koiora

Biotechnology is the application of biological sciences and technologies to solve real-world problems. While it has been used for decades - for example, to provide insulin for diabetics - its potential and its implications for society are still being realised.

A BSc major in Biotechnology provides a grounding in biotechnology and its underlying biological and chemical sciences. It is helpful to have some elementary knowledge of biology, chemistry and statistics. Students can specialise in areas such as bioactives and biodiscovery, protein and nucleic acid biotechnology or reproductive technologies. As well as gaining a sound scientific education, students consider cultural and ethical issues, and are introduced to aspects of the commercial environment and technology transfer involved in bringing biotechnological developments to Aotearoa's marketplace, as well as internationally.

As an area of science that is constantly progressing, Biotechnology prepares students for a diverse array of career opportunities with a focus on those in the biotech sector. **MAJOR REQUIREMENTS**

- BIOL 111, BTEC 101, CHEM 121; one course from (CHEM 122, PHIL 106, SCIS 211)
- BIOL 241, BTEC 201; two courses from (BIOL 236, 244, 252, CHEM 201, 205)
- BTEC 301, SCIE 310; one course from (BIOL 340, BMSC 301, 334, 339, CHEM 301, 305)

Note: If you have fewer than 16 NCEA Level 3 Achievement Standard credits in Chemistry including 2 external standards, or equivalent background, you must pass CHEM 113 in trimester 1 before entering CHEM 121 (which is taught in both T1 and T2).

If you have any questions and/or need course advice, please feel free to contact the Biotechnology Programme Director, Dr David Ackerley (david.ackerley@vuw.ac.nz)

Example programme of study

(required courses for the Biotechnology major are highlighted in bold).

	Year 1	Year 2	Year 3
T1	BTEC 101 Introduction to Biotechnology BIOL 114 Biology of Animals SCIS 101 Science in Everyday Life CHEM 121 Chemistry of Life ¹	BIOL 244 Introductory Biochemistry BIOL 252 Cell and Developmental Biology SCIS 211 Contemporary Issues in Science, Environment and Technology	BTEC 301 Biotechnological Techniques and Processes BIOL 340 Genes and Genomes BMSC 301 Medical Microbiology
T2	BIOL 111 Cell Biology STAT 193 Statistics in Practice MAOR 123 Te Iwi Māori me ān Tikanga/Māori Society and Culture CHEM 122 Chemistry of Matter, Energy, and the Environment	BIOL 241 Genetics BTEC 201 Molecular Biotechnology BIOL 236 Microbes and their Environments	SCIE 310 Innovation and Entrepreneurship in Science BMSC 334 Cell and Immunobiology BMSC 339 Cellular Regulation

- Students without the NCEA requirements to enter directly to CHEM 121 Chemistry of Life should take CHEM 113 Concepts of Chemistry in Trimester 1, and take CHEM 121 in Trimester 2.
Students who can enter directly into CHEM 121 Chemistry of Life can take it in Trimester 1, and take an alternative course in Trimester 2

CELL AND MOLECULAR BIOSCIENCE (CBIO)

Mātauranga Koiora Pūtau

The cutting edge of biology is at the cellular and molecular level. Only by understanding the molecular machinery inside cells, and the interactions between cells, can you understand the ongoing revolutions in medicine, agriculture and even genomics-based disciplines such as modern ecology. A major in Cell and Molecular Bioscience gives you this deep understanding of “the stuff too small to see”.

Courses in this major concentrate on areas including biochemistry, molecular biology, cell biology, genetics, physiology and pharmacology.

MAJOR REQUIREMENTS

- a. BIOL 111, 113, 114, CHEM 121
- b. BIOL 241, 243, 244, 252
- c. BIOL 340, BMSC 339; one course from (BMSC 334, 335, 343, 354, BTEC 301)

Note: If you have fewer than 16 NCEA Level 3 Achievement Standard credits in Chemistry including 2 external standards, or equivalent background, you must pass CHEM 113 in trimester 1 before entering CHEM 121 (which is taught in both T1 and T2).

If you have any questions and/or need course advice, please feel free to contact the Cell and Molecular Bioscience Programme Director, Dr Bronwyn Kivell (Bronwyn.Kivell@vuw.ac.nz)

Example programme of study
(required courses for the Cell and Molecular Bioscience major are highlighted in bold).

	Year 1	Year 2	Year 3
T1	BIOL 113 Biology of Plants BIOL 114 Biology of Animals BTEC 101 Introduction to Biotechnology CHEM 113 Concepts of Chemistry 1	BIOL 244 Introductory Biochemistry BIOL 252 Cell and Developmental Biology BIOL 228 Animal Diversity	BIOL 340 Genes and Genomes BMSC 335 Advanced Physiology BTEC 301 Biotechnological Techniques and Processes
T2	BIOL 111 Cell Biology CHEM 121 Chemistry of Life¹ BMSC 117 The Biology of Disease MAOR 123 Te Iwi Māori me āna Tikanga/Māori Society and Culture	BIOL 241 Genetics BIOL 243 Physiology and Pharmacology BTEC 201 Molecular Biotechnology	BMSC 339 Cellular Regulation BMSC 334 Cell and Immunobiology BIOL 329 Evolution

1. Students without the NCEA requirements to enter directly to CHEM 121 Chemistry of Life should take CHEM 113 Concepts of Chemistry in Trimester 1, and take CHEM 121 in Trimester 2.

ECOLOGY AND BIODIVERSITY (EBIO)

Mātai Hauropi, ngā Momo Koiora hoki

In this major, you will learn about the huge diversity of plants, animals and micro-organisms that inhabit the Earth. After a broad introduction, the major in Ecology and Biodiversity focuses on areas of plant, animal and ecosystem diversity and function. Topics include physical and biological processes in ecology, genetics and molecular biology, statistics, plant ecology and conservation, animal ecology and behaviour, and evolution. You'll find it helpful to have some elementary knowledge of biology and statistics.

Study in Wellington offers access to some unique centres of native biodiversity including the Otari-Wilton's Bush, Kapiti Island Nature Reserve and the urban ecosanctuary Zealandia.

For a career that has anything to do with the understanding and management of living things and their interactions with each other and with people, a BSc in Ecology and Biodiversity is ideal.

MAJOR REQUIREMENTS

- BIOL 111, 113, 114, STAT 193
- BIOL 222; BIOL 241 or STAT 292; 40 further points from (BIOL 227, 228, 236, 241)
- BIOL 327; 40 further points from (BIOL 325, 328, 329)

* Students enrolled in an EBIO major before 2022 will be allowed to graduate under the regulations in place when they enrolled.

If you have any questions and/or need course advice, please feel free to contact the Ecology and Biodiversity Programme Director, Dr Phil Lester (Phil.Lester@vuw.ac.nz)

Example programme of study

(required courses for the Ecology and Biodiversity are highlighted in bold, requirement to take one of two specific courses in italics).

	Year 1	Year 2	Year 3
T1	BIOL 113 Biology of Plants BIOL 114 Biology of Animals ESCI 111 The Earth System: Understanding our Dynamic Earth and Environment GEOG 114 Environment and Resources: the Foundations	BIOL 222 Ecology and Environment BIOL 228 Animal Diversity <i>STAT 292 Applied Statistics 2A</i>	BIOL 327 Population and Community Ecology BIOL 325 Global Change Biology GEOG 224 Geomorphology
T2	BIOL 111 Cell Biology STAT 193 Statistics in Practice MAOR 123 Te Iwi Māori me āna Tikanga/Māori Society and Culture BIOL 132 Biodiversity and Conservation	<i>BIOL 241 Genetics</i> BIOL 227 Plants and Algae: Function and Diversity BIOL 236 Microbes and their Environments	BIOL 328 Behaviour and Conservation Ecology BIOL 329 Evolution GEOG 214 Environment and Resources: New Zealand Perspectives

MARINE BIOLOGY (BMAR)

Mātai Koiora Moana

Marine Biology is the study of ocean organisms and how they interact with one another and their environment. New Zealand has one of the most extraordinary and unspoilt marine ecosystems in the world, and Te Herenga Waka, which has the closest campus to the sea, is a leader in the field of marine biology. The University has its own marine field station, the Coastal Ecology Laboratory (WUCEL), and its own research vessels, the tri-hull *Raukawa Challenger* and three aluminum vessels, *Pipi*, *Tuatua* and *Tipa*.

In addition to links with a host of New Zealand and international universities, the Marine Biology group has ties with industry and all the major players in the public sector of the marine industry. These include Crown research institutes such as NIWA, the Ministry of Fisheries and the Department of Conservation, all of which are in Wellington. These varied links mean that at Te Herenga Waka, you will learn both how the oceans work and how humans interact with the marine environment.

MAJOR REQUIREMENTS

- a. BIOL 111, 113, 114, STAT 193
- b. BIOL 227, 228, 271, STAT 292
- c. BIOL 371, 372, one of (BIOL 370, 373)

If you have any questions and/or need course advice, please feel free to contact the Marine Biology Programme Director, Dr James Bell (james.bell@vuw.ac.nz)

Example programme of study

(required courses for the Marine Biology are highlighted in bold).

	Year 1	Year 2	Year 3
T1	BIOL 113 Biology of Plants BIOL 114 Biology of Animals ESCI 111 The Earth System: Understanding our Dynamic Earth and Environment GEOG 114 Environment and Resources: the Foundations	BIOL 228 Animal Diversity STAT 292 Applied Statistics 2A BIOL 222 Ecology and Environment	BIOL 370 Field Marine Ecology BIOL 371 Marine Ecology BIOL 325 Global Change Biology: The Ecology of Our Planet Under Stress
T2	BIOL 111 Cell Biology STAT 193 Statistics in Practice MAOR 123 Te Iwi Māori me āna Tikanga/Māori Society and Culture BIOL 132 Biodiversity and Conservation	BIOL 227 Plants and Algae: Function and Diversity BIOL 271 Introductory Marine Ecology BIOL 241 Genetics	BIOL 372 Applied Marine Biology BIOL 328 Behaviour and Conservation Ecology BIOL 329 Evolution

MINORS IN THE BACHELOR OF SCIENCE (BSc)

Biology, Biotechnology, Cell and Molecular Bioscience, Ecology and Biodiversity, and Marine Biology subjects are also available in the BSc as minors. You may also be able to import a minor from the subject of the Bachelor of Biomedical Science*.

To achieve a minor in one of these subjects, you must have at least 60 points at 200 level or above from the courses required for the major in that subject. Of that 60 points, at least 15 points must be at 300 level. Where our subjects have specialist codes (such as the BTEC code for Biotechnology), you must have at least 40 points of courses with that subject code. Additionally, you are not allowed to use a 300-level course to count towards two or more qualifications (e.g., a major and a minor, or two minors). For example, you cannot use BIOL 340 to meet requirements of both a major in Biotechnology and a minor in Cell and Molecular Bioscience. You cannot have a major and a minor in the same subject.

Although minors are described in terms of courses at 200-level and above, remember that you will need to do 100-level courses to meet the prerequisite requirements of the courses you choose to take in your minor.

Example minors

There are many combinations of courses you could take to meet the requirements of a minor*. The examples given here are to illustrate how minors work. In designing your own combination, note the requirements described above and plan to meet the prerequisites for courses you intend to take.

Biology

40 points from BIOL/BMSC/BTEC 201–299 and any 20 points from BIOL/BMSC/BTEC 301–399.

Biotechnology

BIOL 241, BTEC 201, 301

Cell and Molecular Bioscience

Example 1: A genetics route

BIOL 241, 244, 340

Example 2: A cell biology route

BIOL 244, 252, BMSC 339

Ecology and Biodiversity

BIOL 227, 228, 325

Marine Biology

BIOL 228, 271, 372

* There is one exception: *if you are majoring in Biology, Biotechnology or Cell and Molecular Bioscience in the BSc, you can't do a minor from the BBmedSc.*

THE BACHELOR OF BIOMEDICAL SCIENCE

Human health and clinical medicine are supported by researchers and professionals whose training and skills are in the biomedical sciences. Old diseases that resist treatment or control, new diseases, changing human lifestyles and environments, and new and improved drugs are all challenges that draw the attention of biomedical scientists.

BBMEDSC MAJORS

- Human Genetics
- Molecular Pathology
- Molecular Pharmacology and Medicinal Chemistry.

MAJOR REQUIREMENTS FOR BIOMEDICAL SCIENCE

PART 1—all majors

- a. BIOL 111, 114, BMSC 117, CHEM 121, STAT 193
- b. BIOL 241, 243, 244

Note: If you have fewer than 16 NCEA Level 3 Achievement Standard credits in Chemistry including 2 external standards, or equivalent background, you must pass CHEM 113 in trimester 1 before entering CHEM 121 (which is taught in both T1 and T2).

PART 2—students must complete one of the following majors in addition to Part 1:

HUMAN GENETICS (HGEN)*

Mātai Iranga

Majoring in Human Genetics will give you the skills and vocabulary to understand how systems work, how genes are encoded and interpreted correctly and how all the proteins in the cells function together. You'll learn how to carry out research that will contribute to this field of science. You might work on cures for cancer or on research of diseases like multiple sclerosis, reproductive dysfunction, drug addiction and neurodegenerative disease.

- a. COMP 132 (or 102 or 112)
- b. BIOL 252
- c. BIOL 340, BMSC 339, 343.
- d. at least one further course from 200 or 300 level BIOL, BMSC, BTEC, COMP, DATA, PSYC or STAT courses
- e. an additional further course from 300-level BIOL, BMSC, BTEC, COMP, DATA, PSYC or STAT courses

MOLECULAR PATHOLOGY (MOLP)*

Mātai Mate Rāpoi Ngota

A Molecular Pathology major investigates the structure of organs and how diseases are caused at a system level. You will look at the bacterial, viral and parasitic microorganisms that can cause disease, and how the immune system works. You'll also look at what happens to tissue and organ function when diseases take over the body.

- a. COMP 132 or PSYC 122 (or COMP 102 or 112)
- b. BIOL 252
- c. BMSC 301, 334, 335, BIOL 340

MOLECULAR PHARMACOLOGY AND MEDICINAL CHEMISTRY (MPMC)

Mātai Taka Rongoā, Matū Rongoā Hoki

This major will give you a solid grounding in the chemistry of the human body. You'll learn about modern chemical methods for the synthesis of drugs - and also the application of those drugs and how they work within a living system.

- a. COMP 132 or PSYC 122 (or COMP 102 or 112)
- b. CHEM 201, 205
- c. BMSC 335, 354, CHEM 301, 305
- d. One further course from 300-level BIOL, BMSC, BTEC, CHEM, COMP, DATA, PSYC or STAT courses

If you have any questions and/or need course advice, please feel free to contact the Biomedical Science Programme Director, Dr Davide Comoletti (davide.comoletti@vuw.ac.nz)

Example programme of study based on the Human Genetics major

(required courses for the Bachelor of Biomedical Sciences major are highlighted in bold).

	Year 1	Year 2	Year 3
T1	BIOL 114 Biology of Animals STAT 193 Statistics in Practice CHEM 113 Concepts of Chemistry 1 PSYC 121 Introduction to Psychology 1	BIOL 244 Introductory Biochemistry BIOL 252 Cell and Developmental Biology BIOL 228 Animal Diversity	BIOL 340 Genes and Genomes BMSC 343 Advanced Genetics BMSC 335 Advanced Physiology
T2	BIOL 111 Cell Biology CHEM 121 Chemistry of Life BMSC 117 The Biology of Disease COMP 132 Programming for the Natural and Social Sciences	BIOL 241 Genetics BIOL 243 Physiology and Pharmacology BIOL 236 Microbes and their Environments	BMSC 339 Cellular Regulation BMSC 334 Cell and Immunobiology BMSC 354 Pharmacology

Note:

1. Students with the NCEA requirements to enter directly to CHEM 121 can replace CHEM 113 with CHEM 121 in trimester 1, and take an alternative course in trimester 2, such as STAT 193.

The writing courses, WRIT 101 (Writing English) and WRIT 151 (Academic Writing in ESL) are recommended.

You can major in one or two subjects. Your first major must be one of the three BBmedSc subjects, and your second major can be from the BBmedSc degree, or another undergraduate degree, such

as the BSc. Combinations involving Chemistry, Computer Science, Data Science, Psychology, or Statistics may be especially favourable, given the list of optional courses for the BBmedSc majors.

If you take two majors under the BBmedSc degree, a special rule allows you to share 300-level courses, i.e. allowing one course to meet the requirements of the two majors. However, you are *required to obtain 120 points of 300-level courses* that meet the requirements for the two majors.

For example, if you were to do the Human Genetics major of the BBmedSc and the Cell and Molecular Biosciences major of the BSc:

- You can share BIOL340, BMSC 339 and 343 meeting requirements of both majors. However, this is only 60 points at 300-level.
- You will need to find an additional 60 points, which must come from the courses named in the majors. These are:
 - BMSC 334, 335, 354, BTEC 301 (optional courses in the Cell and Molecular Biosciences major); and
 - any 300-level BIOL, BMSC, BTEC, COMP, DATA, PSYC or STAT courses BMSC courses (optional courses in the Human Genetics major).

MINORS IN THE BACHELOR OF BIOMEDICAL SCIENCE (BBmedSc)

The subjects of the BBmedSc degree can now be taken as minors. To get a minor in a BBMedSci subject you must have at least 60 points at 200-level or above from the courses listed for the majors in the degree, including the courses listed for the subjects below.

Human Genetics

BIOL 241, 252, BMSC 343.

Molecular Pathology

BIOL 243, 252, BMSC 335.

Molecular Pharmacology and Medicinal Chemistry

BIOL 243 or 244; BMSC 354, CHEM 201.

You can also choose to minor in a subject from another undergraduate degree. There is one exception: *due to the overlap in courses, you are not allowed to take a minor in Biology, Biotechnology or Cell and Molecular Science from the BSc if you are doing a BBmedSc.*

COURSE DESCRIPTIONS

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

Check online for updates and course schedules: <https://www.wgtn.ac.nz/students/study/timetable>

HOW TO USE THIS GUIDE

Course	Course reference number	Title	Points	Trimester
↓	↓	↓	↓	↓
BIOL 111	CRN 566	CELL BIOLOGY	15 PTS	2/3

100-LEVEL COURSES

BIOL 111	CRN 566	CELL AND MOLECULAR BIOLOGY	15 PTS	2/3
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Course coordinator: A/Prof Monica Gerth

This course will explore the molecular basis of life, providing students with a strong foundation in cell biology. Key concepts will include the structure and function of major cell types, biological chemistry and metabolism, and cell division and development. We'll explore these concepts using a variety of examples from across the tree of life, including plants, animals and microbes.

BIOL 113	CRN 7037	BIOLOGY OF PLANTS	15 PTS	1/3
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Course coordinator: Dr Fabian Westermann

An exploration into the structure, function and biodiversity of plants and fungi, emphasizing their adaptations to different environments, their interactions with other organisms, and their fundamental importance to humanity. It offers a solid foundation for students who wish to pursue a career in plant sciences, ecology, conservation biology or biotechnology and is a key element of the Ecology and Biodiversity major. Extensive previous knowledge of plant biology is not required, but secondary school biology is helpful.

BIOL 114	CRN 7038	BIOLOGY OF ANIMALS	15 PTS	1/3
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Restriction: **BMSC 114** *Course coordinator: Dr Fabian Westermann*

An introduction to animal structure and function. This course is largely based on the biology of mammals with a strong emphasis on human biology, but comparison is made throughout with other animals. The aim is to demonstrate the structural and functional unity of animals and their variety and diversity as expressed in evolutionary terms. It is not assumed that students have extensive previous knowledge of the subject, and those who do will find differences in scope and emphasis from school studies.

BIOL 132	CRN 568	BIODIVERSITY AND CONSERVATION	15 PTS	2/3
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Course coordinator: Prof Phil Lester

An introduction to the diversity, management and conservation of microbial, plant and animal communities. Using key taxa or ecosystems as examples, students will gain an appreciation of the current issues facing the world's biodiversity, and explore possible methods for conservation, including habitat restoration, translocation and predator control.

BMSC 117	CRN 8739	THE BIOLOGY OF DISEASE	15 PTS 2/3
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Course coordinator: Prof Anne La Flamme

The nature and origin of disease. Bacteria and viruses: structure, identification and classification. Mechanisms of infection, pathogenesis, virulence, host susceptibility, immunity, epidemiology. Control strategies, new technologies. New organisms. Invertebrate and fungal parasites. Ecological and cultural aspects of disease.

BTEC 101	CRN 11092	INTRODUCTION TO BIOTECHNOLOGY	15 PTS 1/3
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Course coordinator: Prof David Ackerley

The aims of this course are to provide a solid understanding of the pure and applied science underlying the biotechnology industry, and to provide insight into the cultural and ethical values, and economic and political issues, that this science must align with. Particular focus in lectures will be given to the techniques and applications of recombinant biotechnology in microbes, plants and animals; harnessing natural resources; health-related biotechnology; reproductive biotechnology; environmental biotechnology and regulation of biotechnology.

CHEM 113	CRN 17147	CONCEPTS OF CHEMISTRY	15 PTS 1/3
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Prerequisites: We strongly recommend students who have not completed level 2 NCEA Chemistry to take CHEM 191 over the summer
Restrictions: CHEM 114, 115

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/courses/CHEM/113/2024/offering?crn=17147>

CHEM 121	CRN TBC	CHEMISTRY OF LIFE	15 PTS 1/3 2/3
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Prerequisites: CHEM 113 or 16 NCEA level 3 Achievement Standard credits in Chemistry including 2 external standards, or equivalent background in Chemistry

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/courses/CHEM/121/2024/offering?crn=35058>

CHEM 122	CRN TBC	CHEMISTRY OF MATTER, ENERGY AND THE ENVIRONMENT	15 PTS 2/3
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Prerequisites: CHEM 114 or (A- or better in CHEM 113 and concurrent enrolment in CHEM 114)
Restrictions: CHEM 204

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/courses/CHEM/122/2024/offering?crn=35060>

STAT 193	CRN 1791/11333 CRN 4442/6164 CRN 17069	STATISTICS IN PRACTICE	15 PTS 1/3 2/3 3/3
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Restrictions: MATH 277, QUAN 102
Streams: 1/3: Stream A (CRN 1791) Stream B (CRN 11333)
2/3: Stream A (CRN 4442) Stream B (CRN 6164)
3/3: CRN 17069

Please check the School of Mathematics and Statistics for further information:
<https://www.wgtn.ac.nz/courses/STAT/193/2024/offering?crn=1791>

200-LEVEL COURSES

BIOL 219 CRN 8828 NEW ZEALAND FLORA & FAUNA 15PTS 3/3

Prerequisite: 60 points

Course coordinator: Prof Kevin Burns

A hands-on exploration of how New Zealand's natural history has evolved to be so different from that found on continental landmasses. Lecture-based material will cover the basic principles of evolution, island ecology and historical biogeography. Local field trips in the Wellington region will reinforce lecture-based material by exposing students to native plants and animals.

BIOL 222 CRN 15180 ECOLOGY AND ENVIRONMENT 20 PTS 1/3

Course coordinators: Dr Rachael Shaw & Dr Nicola Day

Prerequisites: STAT 193 & 30 points from
(BIOL 111, 113, 114, 132, ENVI/GEOG 114, ESCI/GEOG 111, ESCI 112)
Restrictions: GEOG/ENVI 222

The course will focus on physical and biological processes in terrestrial environments and ecosystem functioning. The field trip will introduce techniques relevant to field-based enquiry in ecology, environmental and earth science.

Note: Students who enroll in field courses must be physically able and must have a good level of physical fitness. If you are unable to undertake a field course like BIOL 222 which is required for your major, please contact your Titoko advisor to support you in making alternative arrangements that will enable you to complete your major.

BIOL 227 CRN 9214 PLANTS AND ALGAE FUNCTION AND DIVERSITY 20 PTS 2/3

Prerequisite: BIOL 113.

Course coordinator: Prof Joe Zuccarello

Plant and algal diversity and structure with emphasis on adaptations of the whole organism; evolution of photosynthetic organisms (including blue-green bacteria, algae and plants) and fungi.

BIOL 228 CRN 9215 ANIMAL DIVERSITY 20 PTS 1/3

Prerequisite: BIOL 114

Course coordinator: Prof Kevin Burns

Diversity, form and function of animals; an overview of the taxonomic and morphological diversity of all animals; focused study of selected terrestrial and aquatic taxa, including sponges, cnidarians, annelids, molluscs, arthropods and vertebrates (including fish, amphibians, reptiles, birds and mammals).

BIOL 236 CRN 10761 MICROBES AND THEIR ENVIRONMENTS 20 PTS 2/3

Prerequisite: BIOL 111

Course coordinator: Dr Monica Gerth

Microbes may be small, but they are mighty. They make up ~15% of the biomass on Earth and are critical drivers of ecological processes. This course will introduce the physiological and biochemical diversity of microbes. It will also explore the important roles that microbes play in different environments (soil, water, and within hosts).

BIOL 241 CRN 9055 GENETICS 20 PTS 2/3

Prerequisite: BIOL 111

Course coordinator: Dr Melanie McConnell

An introduction to the structure, behaviour, and regulation of chromosomes, genes and DNA; and to the processes of heredity and the mechanisms by which genetic information is transmitted and expressed in animals (including humans), plants and micro-organisms. Introduction to population genetics. DNA technologies and the ethics of their use.

BIOL 243 CRN 9057 PHYSIOLOGY AND PATHOLOGY 1 20 PTS 2/3

Prerequisites: BIOL 111, 114; CHEM 113, 114 or 121

Course coordinator: Dr Davide Comoletti

Restriction: BIOL 253

The functioning and roles of the peripheral nervous system and endocrine/neuroendocrine systems in the control of activity of the cardiovascular, respiratory, renal and reproductive systems. The emphasis is on human physiology. For these systems, mechanisms of disease (pathological processes) will be presented alongside normal and abnormal physiology.

BIOL 244 CRN 18337 INTRODUCTORY BIOCHEMISTRY 20 PTS 1/3

Prerequisites: BIOL 111; CHEM 113 or 114 or 121

Course coordinator: Dr Lifeng Peng

Restriction: BIOL/BMSC 239, 240, BMSC 244

An introduction to the relationship between structure and function of proteins, including catalysis and its regulation; the mechanisms and roles of metabolic processes in the interconversion of molecules in animals, plants and micro-organisms.

BIOL 252 CRN 9056 CELL AND DEVELOPMENTAL BIOLOGY 20 PTS 1/3

Prerequisites: BIOL 111, 114

Course coordinator: Dr Diane Ormsby

Restriction: BMSC 252

This course expands on topics introduced in first year cell biology, covering the structure and behaviour of cells in terms of underlying molecular events, and the role of cells in the physiology and development of the whole organism.

BIOL 271 CRN 9216 INTRODUCTORY MARINE BIOLOGY 20 PTS 2/3

Prerequisites: 60 points, including BIOL 114

Course coordinator: Prof Simon Davy

An introductory course focusing on marine biology and ecology. This course introduces students to the diversity and physiology of marine organisms, biological oceanography, the structure and function of marine ecosystems such as the deep sea, polar seas, rocky shores, mangrove forests and coral reefs and marine conservation issues.

BTEC 201 CRN 11093 MOLECULAR BIOTECHNOLOGY 20 PTS 2/3

Prerequisites: BIOL 111, BTEC 101

Course coordinator: Prof David Ackerley

The aims of this course are to introduce the biotechnology industry, through examples of biotechnological innovation, introduction to microbial, plant and animal biotechnology, harnessing natural resources, health-related biotechnology and placing these in the context of cultural and ethical values and political issues. A key focus will be the understanding of important biotechnological processes and events at a molecular level.

CHEM 201 CRN 8607 ORGANIC CHEMISTRY 15 PTS 2/3

Prerequisite: (CHEM 114 or 121, 115) or equivalent

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/study/programmes-courses/courses/by-subject?sub=18>

**CHEM 205 CRN 8610 CHEMICAL SYNTHESIS
LABORATORY COURSE 15 PTS 2/3**

Prerequisite: (CHEM 114 or 121, 115) or equivalent

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/study/programmes-courses/courses/by-subject?sub=18>

STAT 292 CRN 18331 APPLIED STATISTICS 2A 15 PTS 1/3

Prerequisites: STAT 193 or a comparable background in Statistics

Please check the School of Mathematics and Statistics for further information:

<https://www.wgtn.ac.nz/courses/STAT/292/2022/offering?crn=18331>

300-LEVEL COURSES

BIOL 314	CRN 27126	ISLAND ECOLOGY & EVOLUTION	15 PTS 1/3
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Prerequisite: BIOL/GEOG 222 and 15 200-level BIOL, ENVI or STAT pts; or permission of Head of School
Course coordinator: Prof Kevin Burns
Restriction: BIOL 414

This course is not offered in 2024.

BIOL 325	CRN 19701	GLOBAL CHANGE BIOLOGY: THE ECOLOGY OF OUR PLANET UNDER STRESS	20 PTS 1/3
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Prerequisites: 40 200-level BIOL pts
Course coordinator: Dr Chris Cornwall

An introduction to the eco-physiological responses of plants and animals to environmental and anthropogenic stress, with an emphasis on the effects of changes in global climate and land use. The course focuses on biological functions as they are affected by interactions with their physical, chemical and biotic environments.

BIOL 327	CRN 9218	POPULATION AND COMMUNITY ECOLOGY	20 PTS 1/3
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Prerequisites: BIOL/GEOG 222, 15 200-level BIOL, ENVI or STAT points
Course coordinator: A/Prof Stephen Hartley

This course will cover practical and conceptual approaches to the study of plant and animal ecology; covering population dynamics, community structure and ecosystem ecology.

BIOL 328	CRN 9219	BEHAVIOUR AND CONSERVATION ECOLOGY	20 PTS 2/3
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Prerequisite: BIOL/GEOG 222, 15 200-level BIOL, ENVI or STAT points
Course coordinator: Dr Rachael Shaw

This course will cover the behaviour and conservation ecology of animals and plants. The course will include ethology and socio-biology, and ecological, genetic and biogeographic principles relevant to reservation, restoration and reconciliation ecology. Topics will incorporate animal, population and meta-population management, pest control and biosecurity, and human dimensions of environmental management. Case studies and issues of topical interest will be debated.

BIOL 329	CRN 9220	EVOLUTION	20 PTS 2/3
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Prerequisite: BIOL/BMSC 241
Course coordinator: A/Prof Peter Ritchie

Origin and development of concepts about biological history including the establishment of modern experimental methods for understanding pattern and process in the origin of new species

BIOL 340	CRN 9598	GENES AND GENOMES	20 PTS 1/3
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Prerequisites: BIOL/BMSC 241, 244
Restrictions: BMSC 340
Course coordinator: Dr Darren Day

Recombinant DNA technology, biotechnology, gene organisation, expression, chemical genetics and evolution in higher organisms, bioinformatics, and comparative genomics.

BIOL 370	CRN 19801	FIELD MARINE ECOLOGY	20 PTS 1/3
Prerequisites: BIOL 271, STAT 292		<i>Course coordinator: Dr Alice Rogers</i>	
Restrictions: BIOL 272, 373, SCIE 304 in 2018-2020			

This seven-day field course is based at the university's Coastal Ecology Lab (396 The Esplanade, Island Bay), though it also includes 2 nights/3 days at a remote field site. The field component takes place prior to the start of T1, and in 2024 will run from 8th to 14th February. Download and read the course notes prior to the start of class for more details.

A research-based course of sampling, analysis and independent projects, which includes several days of intensive field work and laboratories. PLEASE NOTE: There are two different streams of this course. Stream 1 will run at some point from late January to late February. Stream 2 will operate in the Easter break. See details for each stream in the course content description at <https://www.wgtn.ac.nz/courses/BIOL/370/2024/offering?crn=19801>

BIOL 370	CRN 33237	SUBTIDAL FIELD MARINE ECOLOGY	20 PTS 1/3
Prerequisites: BIOL 271, STAT 292		<i>Course coordinator: Prof Jeff Shima</i>	
Restrictions: BIOL 272, 373, SCIE 304 in 2018-2020			

This seven-day field course is based at the university's Coastal Ecology Lab (396 The Esplanade), Island Bay) and focuses on subtidal marine ecology. In 2024, the field component of this course will run over 7 days, from 5th to 12th April (i.e., over mid-term break in T1). Entry to this course requires passing a swim test (conducted on 18th October of 2023, 11am-12:30pm at Freyberg Pool). Download and read the course notes prior to the start of class for more details.

A research-based course of sampling, analysis and independent projects, which includes several days of intensive field work and laboratories. PLEASE NOTE: There are two different streams of this course. Stream 1 will run at some point from late January to late February. Stream 2 will operate in the Easter break. See details for each stream in the course content description at <https://www.wgtn.ac.nz/courses/BIOL/370/2024/offering?crn=33237>

BIOL 371	CRN 9221	MARINE ECOLOGY	20 PTS 1/3
Prerequisites: BIOL 271, STAT 292		<i>Course coordinator: Prof Jeff Shima</i>	

Focusing on marine system quantitative ecology; teaching encourages students to think critically while investigating ecological processes and impacts upon population dynamics and community structure across various marine settings (e.g., soft shores, rocky and coral reefs). The course emphasises quantitative methods including design, statistical analysis and interpretation of field experiments and observational studies.

BIOL 372	CRN 9222	APPLIED MARINE BIOLOGY	20 PTS 2/3
Prerequisites: BIOL 228, 271		<i>Course coordinator: Prof James Bell</i>	

The biology, form, and function of selected New Zealand marine invertebrate groups with special emphasis given to species of economic or cultural significance; the biological, ecological, legal, and economic background to fisheries, fisheries management and aquaculture worldwide and in New Zealand.

BIOL 373	CRN TBC	TROPICAL FIELD MARINE ECOLOGY	20 PTS 1/3
Prerequisites: BIOL 271, STAT 292		<i>Course coordinator: Prof Jeff Shima</i>	
Restrictions: BIOL 272, 370, SCIE 304 in 2018-2020			

This course is not offered in 2024.

BMSC 301	CRN 8747	MEDICAL MICROBIOLOGY	20 PTS 1/3
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Prerequisites: BMSC/BIOL 244 or BTEC 201 *Course coordinator: Dr Joanna MacKichan*

This course charts the development of the microbiology field up to the present day. The course features an in-depth investigation of microorganisms at the genetic and phenotypic levels and examines their role in infectious diseases. Students will acquire practical experience in the characterization and identification of microbes using both classical and modern techniques. This course includes six 4-hour laboratory classes. Students are advised to check the laboratory class times before course enrolment.

BMSC 334	CRN 15262	CELL AND IMMUNOBIOLOGY	20 PTS 2/3
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Prerequisite: BMSC/BIOL 241, 252 *Course coordinator: Prof Anne La Flamme*
Restrictions: BIOL 334

The cellular and molecular basis of the immune system, its organisation, reactions and controls in health and disease. Topics covered include the activation, differentiation and control of specific cell functions and immunological methods in research.

BMSC 335	CRN 15263	PHYSIOLOGY AND PATHOLOGY 2	20 PTS 1/3
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Prerequisite: BIOL/BMSC 243 *Course coordinator: A/Prof Peter Pfeffer*
Restriction: BIOL 335

Cellular, organismal and integrative human liver, muscle, renal and neurophysiology, energy and nutritional homeostasis and human development. Diseases of these systems will also be described.

BMSC 339	CRN 15265	CELULAR REGULATION	20 PTS 2/3
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Prerequisites: BMSC/BIOL 244, 252 *Course coordinator: Dr Lifeng Peng*
Restriction: BIOL 339

Consideration of molecular processes which affect normal cell structure and function and their regulation. Abnormalities, including cancer, are also described.

BMSC 343	CRN 19861	ADVANCED GENETICS	20 PTS 1/3
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Prerequisite: BMSC/BIOL 241 *Course coordinator: Dr Andrew Munkacs*
Restrictions: BIOL 343, BIOL/BMSC 341, 342

A survey of experimental approaches in genetics, from classical screens to genome wide analyses, examining a variety of genetic model organisms and their specific applications, cytogenetics, chromosomal abnormalities and associated genetic counselling issues in humans. Fundamentals are applied to searches for complex disease genes and understanding genetic variation in human populations.

BMSC 354	CRN 8756	PHARMACOLOGY	20 PTS 2/3
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Prerequisite: 35 points from (BIOL/BMSC 243, 244, CHEM 115, 201) *Course coordinator: Prof Paul Teesdale-Spittle*

Review of the principles of pharmacology; transport across the blood brain barrier and placental membrane; drug bio-transformations and application to prodrugs; assay techniques; quantification of drug absorption, distribution and elimination kinetics; drug targets; drug design; illustrative case studies.

BTEC 301	CRN 11094	BIOTECHNOLOGICAL TECHNIQUES AND PROCESSES	20 PTS 1/3
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Prerequisite: BTEC 201

Course coordinator: A/Prof Janet Pitman

The aims of this course are to provide a solid understanding of the pure and applied science underlying the biotechnology industry, and to provide insight into the cultural and ethical values, and economic and political issues, that this science must align with. Particular focus in lectures will be given to the techniques and processes involved in development of therapeutics, vaccines, and diagnostics, and to stem cell and genetic technologies. A six-week laboratory component will provide hands-on experience with key techniques and concepts introduced in both BTEC 201 and BTEC 301.

CHEM 301	CRN 9058	ORGANIC CHEMISTRY	15 PTS 1/3
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Prerequisite: CHEM 201

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/courses/CHEM/301/2024/offering?crn=9058>

CHEM 305	CRN 9059	CHEMISTRY SYNTHESIS LABORATORY	15 PTS 1/3
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Prerequisites: CHEM 201, 205

Please check the School of Chemistry and Physical Sciences (SCPS) for further information:
<https://www.wgtn.ac.nz/courses/CHEM/305/2024/offering?crn=9059>

SCIE 310	CRN 26078	INNOVATION AND ENTREPRENEURSHIP IN SCIENCE	20 PTS 2/3
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Prerequisite: 60 200-level BSc or BBmedSc pts

The course covers the generic processes in the development of a technology or technological products with selected aspects such as economic analysis, entrepreneurship, project management, marketing and an introduction to tools for business planning.

This course is not offered in 2024.

WHO TO CONTACT

STUDENT AND ACADEMIC SERVICES— Titoko—Centre for Student Success

Te Wāhanga Pūtaiao

Address: Level 1, Cotton Building
Phone: 04-463 5101
Email: info@vuw.ac.nz – Please include full name in the subject line
Website: <https://www.wgtn.ac.nz/science/student-success>
Hours: 8.30am–3:30pm Monday, Wednesday, Thursday, Friday
9.30am–3:00pm Tuesday

Please note at busy times of the year this office may close for the day at 3:00pm.

The Titoko—Centre for Student Success team offers a range of services that cover all student-related matters from applications and enrolment to graduation. The team provides administration support of undergraduate and postgraduate students.

Student Advisor	Email	Contact
Briar Smith	Briar.smith@vuw.ac.nz	04 887 3103
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Alofa Wright	Alofa.wright@vuw.ac.nz	04 463 5799
Shannon Meighan	Shannon.meighan@vuw.ac.nz	04 887 4002
Johan Barnard	Manager, Student and Academic Services Johan.barnard@vuw.ac.nz	04-463 5980
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STAFF CONTACTS

STAFF		ROOM	CONTACT
Head of School	A/Prof Janet Pitman	TTR214	463 7450
Deputy Head of School	A/Prof Wayne Patrick	TTR318	886 4411

Undergraduate Programme Directors

Biology	A/Prof Monica Gerth	TTR316	463 4778
Biomedical Science	A/Prof Davide Comoletti	AM307	463 6029
Biotechnology	Prof David Ackerley	TTR411	463 5576
Cell and Molecular Bioscience	A/Prof Bronwyn Kivell	TTR317	463 5233
Ecology and Biodiversity	Prof Phil Lester	TTR329	463 5096
Marine Biology	Prof James Bell	TTR409	463 8104

ACADEMIC STAFF			RESEARCH AREAS	ROOM	CONTACT
Prof	David	Ackerley	<i>Enzyme engineering, Microbial biotechnology, Synthetic biology</i>	TTR411	463 5576
Prof	James	Bell	<i>Marine biology, population genetics and conservation</i>	TTR408	463 5233 ext 8104
Prof	Kevin	Burns	<i>Biogeography and evolutionary ecology</i>	TTR326	463 6873
Dr	Zaramasina	Clark	<i>Reproductive biology and embryology</i>	TTR322	886 5608
A/Prof	Davide	Comoletti	<i>Neuroscience and structural biology</i>	AM307	463 6029
Dr	Lisa	Connor	<i>Cellular immunology</i>	AM310	463 5233 ext 7542
Prof	Simon	Davy	<i>Marine symbiosis and coral reef biology</i>	TTR214	463 5573
Dr	Darren	Day	<i>Biochemistry, molecular biology</i>	TTR336	463 6087
Dr	Nicola	Day	<i>Plant Microbial Interactions</i>	TTR321	463 6089
Prof	Elaine	Dennison	<i>Clinical research</i>		
Dr	Julie	Deslippe	<i>Plant-microbial interactions</i>	TTR334	463 6084
Dr	Monica	Gerth	<i>Microbiology and biochemistry</i>	TTR316	463 4778
A/Pro	Stephen	Hartley	<i>Conservation biology</i>	TTR33	463 5447
A/Prof	Bronwyn	Kivell	<i>Physiology and neurobiology</i>	TTR317	463 5233
Prof	Anne	La Flamme	<i>Immunology and cell biology</i>	AM306	463 6093
Prof	Phil	Lester	<i>Insect ecology</i>	TTR329	463 5096
Dr	Joanna	MacKichan	<i>Bacterial pathogenesis</i>	AM303	463 4711
Dr	Melanie	McConnell	<i>Genetics and cancer</i>	AM323	463 5233 ext 8136
Dr	Andrew	Munkacsi	<i>Chemical genetics</i>	AM321	463 5171
Prof	Nicola	Nelson	<i>Conservation biology</i>	TTR214	463 5435
Dr	Diane	Ormsby	<i>Reproductive and developmental biology</i>	TTR331	463 5271
Dr	Jeremy	Owens	<i>Metagenomics</i>	TTR410	463 5277
A/Prof	Wayne	Patrick	<i>Biochemistry</i>	TTR318	463 4779
Dr	Lifeng	Peng	<i>Proteomics</i>	AM302	463 5233 ext 8076
A/Prof	Peter	Pfeffer	<i>Developmental and reproductive biology</i>	TTR319	463 7462
A/Prof	Janet	Pitman	<i>Reproductive biology</i>	TTR332	463 7450
A/Prof	Peter	Ritchie	<i>Evolutionary genetics</i>	TTR407	463 5233 ext 8105
Dr	Alice	Rogers	<i>Fisheries</i>	TTR325	463 4786
Prof	Ashley	Rowden	<i>Marine ecology and environment</i>	TTR322	463 6283
Dr	Rachael	Shaw	<i>Animal Cognition and Behaviour</i>	TTR409	4635233 ext8139
Prof	Jeff	Shima	<i>Marine ecology and fish biology</i>	TTR328	463 6494
A/Prof	Paul	Teesdale-Spittle	<i>Biochemistry and pharmacology</i>	AM308	463 6094
Dr	Fabian	Westermann	<i>Lecturer (Teaching)</i>	TTR215	463 6136
A/Prof	Heiko	Wittmer	<i>Conservation and restoration ecology</i>	TTR323	463 7432
Dr	Helen	Woolner	<i>Natural Products</i>	TTR325	463 6090
Prof	Joe	Zuccarello	<i>Molecular biology and phycology</i>	TTR324	463 6414

Adjunct Staff at the Malaghan Institute of Medical Research

Prof Graham Le Gros, Director	<i>Asthma and parasitic diseases</i>	MIMR	499 6914
Prof Mike Berridge	<i>Cancer cell and molecular biology</i>	MIMR	499 6914
Dr Olivier Gasser	<i>Translational immunology</i>	MIMR	499 6914
Prof Ian Hermans	<i>Cancer immunotherapy</i>	MIMR	499 6914
Prof Franca Ronchese	<i>Immune cell biology</i>	MIMR	499 6914

Administrative Staff

Emily Brook	School Manager	TTR212	463 6002
Mary Murray	Administrator – Undergraduate / General	TTR206	463 5339
Mark Stephen	Administrator - Graduate Programmes	TTR206	463 5581
Hannah Hollamby	Administrator – Operations	TTR206	886 4517

Technical Staff

Juan Larrouyet Sarto	Manager Technical Services	TTR211	463 5579
Chris Thorn	Technical Officer Coordinator	TTR401T	463 9756
Mel Dohner	Technical Officer	TTR401	463 4785
Sushila Pillai	Technical Officer	TTR401	886 4432
Neville Higgison	Equipment Officer	TTR012	463 5154
Melanie Doher	Technical Officer	TTR401	463 4785
Craig Doney	Equipment Officer	TTR012	463 4782
Kayla Griffin	Technical Officer	TTR401	463 9759
Jo Hamilton	Technical Officer	TTR401	463 9757
Sue Keall	Senior Technical Officer	TTR401	463 5324
Danyl McLauchlan	Computational Biologist	AM301	463 5735
Daniel McNaughtan	Technical Officer – CEL	CEL101	470 9257
Sushila Pillai	Technical Officer	TTR401	463 4784
Dr Pisana Rawson	Technical Officer	TTR401	463 8240
Paul Roulston	Equipment Officer	TTR401	463 4783
Chis Thorn	Technical Officer	TTR401	463 9756
Simon Maddalena	Technical Officer - CEL	CEL101	470 9250