# Tohu Paerunga Matai Matu Postgraduate Chemistry

Postgraduate study in Chemistry covers research from across a wide range of chemical sciences. You might find yourself in a research group designing enzyme inhibitors for diseases such as cancer, preparing new catalysts to help harness solar energy, developing a greater understanding and control of wine aromas, or designing new analytical instrumentation using laser micromachining.

Postgraduate study in Chemistry can be divided into two general areas – traditional chemistry, such as analytical, educational, environmental, inorganic, materials, medicinal, organic and physical chemistry, or additional disciplines such as forensics, food, wine, polymers and coatings, or green chemistry.

Courses available in this subject include:

- Advanced Green Chemistry
- Advanced Inorganic Chemistry
- Advanced Medicinal Chemistry
- Advanced Physical Chemistry
- Biomolecular Chemistry
- Current Topics in Analytical Chemistry
- Research Methods in Chemistry

## Choosing your supervisor

Supervisors can usually only take a small number of students, so make sure you talk to them sooner rather than later.

Choose an area you feel passionate about. Undertaking research involves successes as well as challenges, so choosing a topic you are genuinely interested in will help you overcome challenges and get through the tough times. Ensure you're compatible with your supervisor. Ask questions, seek advice and share your ideas with academic staff to find out their research interests, and whether you would be a good fit with their current projects.

# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



#### Future opportunities for Chemistry graduates are many and varied.

Postgraduate qualifications in Chemistry introduce you to world-class chemical research and prepare you for chemistry-related careers.

Chemists are found in roles involving agricultural products, brewing and wine making, ceramics, food science, metals, paper, paint and plastics, pharmaceutical, polymers and coatings.

Employers include private companies, Crown Research Institutes, medical and diagnostic or government laboratories, and police forensic units.

# Our graduates have been employed in the following jobs:

- Analytical chemist, Pfizer Pharmaceuticals
  Group
- Vice-president, Biosphere Technologies Inc
- · Chemist, Teck Cominco
- Scientific advisor, Protagonist Therapeutics
- Postdoctoral research associate, Oak Ridge National Laboratory
- Technical director, Kemira Chemicals Inc
- Research and development scientist, Agilent Technologies Australia
- Senior research scientist, Queensland Alumina Ltd

# This subject is available in:

#### Bachelor of Science (Honours)

Postgraduate Diploma in Science

Master of Science

Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Food Science, Forensic Science, Medicinal Chemistry and Wine Science.

# Find out more

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

science.auckland.ac.nz/pg-chemistry

"Research is much like a puzzle, requiring problem solving and creativity to solve, and ultimately it is rewarding..."

# Hugh Douglas Glossop

PhD in Chemistry



# Read Hugh's full story at: science.auckland.ac.nz/hugh-glossop

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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## **Explore and discover**



#### science.auckland.ac.nz/pg-chemistry

## Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs



# Tohu Paerunga Putaiao me te Taiora Kai Postgraduate Food Science and Nutrition

By studying Food Science you can ask questions like, what constitutes a healthy diet? And, is there a way to engineer food to improve its nutritional value?

Food Science focuses on the manufacturing, processing and production of food. As a Food Science student you'll study topics such as the structure and composition of foods, food chemistry, nutritional and sensory qualities, food safety, preservation and evaluation.

Courses available in this subject include:

- Food Safety
- Nutrition in Health and Disease
- Food Processing
- Engineering Biotechnology
- Food Science
- Food Analysis
- Applied Microbiology and Biotechnology
- Advanced Food Science

# Choosing your supervisor

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# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



# Advancements in science and technology have created exciting and challenging opportunities for work.

A postgraduate qualification in Food Science will equip you with the skills to take up challenging positions in a wide variety of research and development contexts, including commercial enterprises in the dairy and brewing industries, Crown Research Institutes, multinational food companies and government agencies.

Our graduates work in areas such as food manufacture, food safety, food analysis, brewing, cereals and baking, dairy products, minimally processed fruits and vegetables, food additives, product development, sensory evaluation, winemaking and healthcare.

# Our graduates have been employed in the following jobs:

- Quality assurance officer, ABE's Bagel Bakery
- Product evaluator, Fisher & Paykel
- Lecturer, Universiti Malaysia Kelantan
- Scientific officer, Ministry for Primary Industries
- Toxicologist

# This subject is available in:

#### Bachelor of Science (Honours)

Postgraduate Diploma in Science

Master of Science

Master of Food Science

Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Chemistry, Chemical and Materials Engineering and Population Health.

# Find out more

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

"If you are considering postgraduate study in Food Science, my advice is to stay curious - ask questions and ask them again until you understand. Science is hard, but it is very satisfying to take a difficult concept, make sense of it, and then apply it to a larger context."

# Vanessa Ung

Doctor of Philosophy in Chemistry

Read Vanessa's full story at: auckland.ac.nz/science/vanessa-ung

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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science.auckland.ac.nz/pg-food-sci

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# Tohu Paerunga Putaiao Tiro Taihara Postgraduate Forensic Science

Apply your scientific expertise to matters of the law with Forensic Science. As our knowledge and technical expertise in science increases, so does the complexity and importance of the science presented to the courts in the legal system.

The Forensic Science programme is jointly run by the University of Auckland and the Institute of Environmental Science and Research (ESR), who are the providers of forensic science to the New Zealand Police.

As a Forensic Science student you will cover a broad range of topics, from the statistical evaluation of glass evidence to the development of new molecules to aid in the visualisation of fingerprint residues. You will learn key skills in the examination of items for forensic evidence and chemical and biological analysis and the application of data science and statistics.

Some of the courses available in this subject include:

- Introduction to Forensic Science
- Fundamental Concepts in Forensic Science
- Statistics and Molecular Biology for Forensic Science
- Techniques and Applications for Forensic Science
- Project in Forensic Science

# Choosing your supervisor

Supervisors can usually only take a small number of students, so make sure you talk to them or the Programme Director sooner rather than later. Choose an area you feel passionate about. Undertaking research involves successes as well as challenges, so choosing a topic you are genuinely interested in will help you overcome challenges and get through the tough times.

Ensure you're compatible with your supervisor. Ask questions, seek advice and share your ideas with academic staff to find out their research interests, and whether you would be a good fit with their current projects.

## Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



Forensic Science is the application of science to matters of law. Our postgraduate qualifications in Forensic Science will prepare you for a career in forensic science and introduce you to leading edge issues and techniques in this exciting field.

Our graduates learn key skills in the examination of items for forensic evidence, chemical and biological analysis as well as modern data analysis.

Many of our alumni have gone on to become forensic scientists or technicians, and can be found in forensic science organisations, the New Zealand Police, academic and commercial science organisations and government agencies.

Others have chosen related careers or decided to pursue further study.

Our graduates have been employed in the following jobs:

- Forensic scientist, Department of Health (NSW)
- Forensic DNA analyst, Royal Canadian Mounted
  Police
- · Crime scene attendant, New Zealand Police
- Senior forensic biologist, Environmental Science & Research Ltd
- Toxicologist scientist, The Drug Detection
  Agency

# This subject is available in:

#### Postgraduate Diploma in Forensic Science

Master of Science

Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Chemistry and Medicinal Chemistry.

# Find out more

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

"The highlight of my career so far has been getting my job with ESR, as positions in Forensic Science in New Zealand are limited, with the bonus that I can see my MSc research being extended and possibly validated into what we do here at ESR."

# Jessie Davys

Master of Science in Forensic Science



ReadJessie's full story at: science.auckland.ac.nz/jessie-davys

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science.auckland.ac.nz/pg-forensic-sci

## Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs



# Tohu Paerunga Pūtaiao Matū Kākāriki Postgraduate Green Chemical Science

Postgraduate study in Green Chemical Science aims to equip you with the necessary skills and knowledge to make important contributions to scientific research in this field.

You will learn about the design and implementation of new manufacturing processes that are benign to the environment and are not hazardous to human health, global warming and sustainable energy sources, full life cycle concepts and assessments, recycling, and the use of green production strategies including biorefineries and enzymatic transformations.

Courses available in this subject include:

- Advanced Green Chemistry
- Modern Methods for the Synthesis of Bioactive Molecules
- Environmental Pollution
- Advanced Inorganic Chemistry
- Chemicals Big and Small
- Biomolecular Chemistry

# Choosing your supervisor

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Ensure you're compatible with your supervisor. Ask questions, seek advice and share your ideas with academic staff to find out their research interests, and whether you would be a good fit with their current projects.

# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



#### A buoyant and interdisciplinary field

Businesses both here and overseas are fast realising that green chemical science approaches can lessen a company's environmental impact, increase their profit margins and improve consumer relationships. What's good for the planet is good for business, and the demand for greener processes means there's an increasing number of jobs available in the sustainability science arena.

Green Chemical Science graduates may find themselves in multi-faceted spaces working alongside people with different skill sets to deliver the best products and processes. As a graduate of this inter-disciplinary specialisation you'll be equipped with the necessary skills and knowledge to take advantage of these career opportunities, and to contribute to society in a meaningful and informed way.

# Our graduates have been employed in the following jobs:

- Chemist
- · Environmental scientist or consultant
- Sustainability scientist
- Chemical policy advisor
- Hazard analyst or communication expert
- Scientific adviser
- Research scientist

# This subject is available in:

#### Bachelor of Science (Honours)

Postgraduate Diploma in Science

Master of Science

#### Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Food Science, Forensic Science, Medicinal Chemistry and Wine Science.

# Find out more

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

science.auckland.ac.nz/pg-green-chem

"My area of research is centred around developing a novel and scalable technology, known as high-energy ball milling, to effectively destroy toxic chemicals at a molecular level."

# Kapish Gobindlal

Doctor of Philosophy in Chemistry.



Read Kapish's full story at: science.auckland.ac.nz/kapish-gobindlal

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#### science.auckland.ac.nz/pg-green-chem

### Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs



# Tohu Paerunga Mātai Matū Rongoā Postgraduate Medicinal Chemistry

Postgraduate study in Medicinal Chemistry combines advanced courses in Chemistry, Biology and Medical Science with laboratory work and a year-long research project supervised by an academic staff member in the School of Chemical Sciences.

Research interests open to exploration include: analytical chemistry, biomolecular chemistry, structural and computational chemistry, bioactive molecules, structural biology, molecular cell biology, toxicology and clinical pharmacology.

Courses available in this subject include:

- Advanced Medicinal Chemistry
- Advanced Physical Chemistry
- Advanced Inorganic Chemistry
- Biomolecular Chemistry
- Current Topics in Analytical Chemistry
- Modern Methods for the Synthesis of Bioactive Molecules

# Choosing your supervisor

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## Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



# Medicinal Chemistry is one of the most rapidly developing areas within the discipline of chemistry, both globally and locally.

Medicinal chemists design and develop drugs for the treatment of disease. By completing the Medicinal Chemistry degree programme, you will have been provided with a unique combination of skills: you will be trained in the synthesis, reactivity and analysis of organic compounds and gain valuable insight into the pharmacological, regulatory and ethical aspects of these bioactive compounds.

Our graduates find employment in a wide range of institutions such as biomedical and pharmaceutical companies, hospitals, local and national government agencies, private research institutions and Crown Research Institutes.

# Our graduates have been employed in the following jobs:

- Commercialisation manager, Kiwi Innovation
  Network
- Patent executive, A J Park
- Medicinal chemist, University of Auckland
- Medical laboratory assistant, New Zealand Blood Service
- Laboratory technician, Eurofins

# This subject is available in:

#### Bachelor of Science (Honours)

#### Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Biomedical Sciences, Chemistry, Food Science and Pharmacology.

# Find out more

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

"I focused on this topic because overcoming bacterial resistance to antimicrobial agents is one of the biggest obstacles we are facing in today's society."

# Urawadee Rajchakit

Doctor of Philosophy in Chemistry, specialising in Medicinal Chemistry.

Read Urawadee's full story at: science.auckland.ac.nz/urawadee-rajchakit

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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#### science.auckland.ac.nz/pg-med-chem

### Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs

AUCKLAND



# Tohu Paerunga Matai Ahupungao Hauora me te Whakaahua Whakaora Postgraduate Medical Physics and Imaging Technology

Medical Physics and Imaging Technology is the application of physics theories, technologies and methods in the field of biomedical imaging, modelling, diagnostics and disease treatments.

This programme involves extensive specialist training in imaging and physiology that may create a pathway to proceed to further postgraduate study in Medical Physics, Biophotonics, Biomedical Imaging or Biophysics. Courses available in this subject include:

Condensed Matter Physics

- Advanced Biomedical Imaging
- Stem Cells and Development
- Biomedical MRI
- Quantum Optics
- Pharmacometrics
- The Dynamic Universe
- Waves and Potentials
- Reproductive Science
- Integrative Physiology

BSc

# Choosing your supervisor

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# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.

science.auckland.ac.nz/scholarships



# SCIENCE

BSc(Hons)

PhD



**No.1** In New Zealand for Employability<sup>2</sup>

#### There is a real need in the biomedical industries for graduates who are proficient in the complementary areas of physics, biology and physiology, and skilled in the design and application of Imaging Technologies.

Te Whatu Ora - Health New Zealand and companies such as Cubic Health and Orion Health require medical physicists with the specific skillset required in biophotonic, biomedical imaging and instrumentation.

# Our graduates have been employed in the following jobs:

- Medical physicist, Te Whatu Ora
- Optics engineer, Cubic Global Defense
- Software test engineer, Orion Health
- Scientific officer, Te Toka Tumai Auckland
- Analyst programmer, Agility CIS
- Consultant, SMS Management and Technology Ltd

Other jobs related to Medical Physics and Imaging Technology include:

- Health analyst
- Medical physicist
- Scientific advisor

# This subject is available in:

#### Bachelor of Science (Honours)

#### Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Geophysics, Mathematics and Photonics.

# Find out more

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

science.auckland.ac.nz/pg-med-physics

"The Honours degree in Medical Physics and Imaging Technology enabled my direct admission into a PhD programme in Physics at the University of Auckland."

# Fang Ou (Rachel)

Graduated with a Bachelor of Technology (Honours) in Medical Physics and Imaging Technology (currently offered as the BSc(Hons) in Medical Physics and Imaging Technology). Graduated with a Doctor of Philosophy in Physics.

Read Fang's full story at: science.auckland.ac.nz/fang-ou

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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### **Explore and discover**



#### science.auckland.ac.nz/pg-med-physics

## Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs



# Tohu Paerunga Ahupūngao Postgraduate Physics

Whether your interest lies in pure physics or a multi-disciplinary field, postgraduate study in Physics offers you a wide range of research options.

From inventing new kinds of lasers, creating innovative technologies to diagnose illness in living tissue, understanding the Earth's changing climate, and searching for planets around distant stars, to understanding the connections between particle physics and the Big Bang, our graduates are well-equipped to work in industry and academia.

You will gain an understanding of the nature of the physical world, alongside training in experimental methods, and the mathematical analysis of physical processes.

Courses available in this subject include:

- Advanced Quantum Mechanics
- Astrophysics
- Advanced Imaging Technologies
- Lasers and Photonic Technologies
- Subsurface Imaging with Seismic and Radar Waves
- The Physics of Climate
- Optoelectronics and Communications

# Choosing your supervisor

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# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



# All of modern science and technology is underpinned by physics and our vibrant research programme illustrates the variety of topics tackled by physicists.

Graduating from a postgraduate programme in Physics opens the door to a range of opportunities for a career in research, business, finance, IT and engineering sector.

You will get the skills you need to succeed and work in a host of interesting jobs in New Zealand and around the world.

# Our graduates have been employed in the following jobs:

- Director of software engineering, MMI S.r.l
- Photonics researcher, LGS Innovations
- Chief scientific officer, ADM Diagnostics LLC
- Consultant medical physicist, The Australasian College of Physical Scientists and Engineers in Medicine
- Meteorologist, hydro & meteo GmbH & Co. KG
- R&D scientist, Fisher and Paykel Healthcare
- Product development, Quantifi Photonics
- Patent attorney, A J Park

# This subject is available in:

#### Bachelor of Science (Honours)

Postgraduate Diploma in Science

Master of Science

Doctor of Philosophy

You may also be interested in our programmes in Biological Sciences, Geophysics, Mathematics, Medical Physics and Imaging, and Photonics.

## Find out more

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

"The fundamental laws that govern our universe have interested me since I was young. I enjoy seeing how we can take a small number of essential principles and use them to understand a multitude of diverse phenomena."

# Caleb Todd

BSc in Physics and Mathematics, BSc (Hons) in Physics

Read Caleb's full story at: science.auckland.ac.nz/caleb-todd

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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# Explore and discover



#### science.auckland.ac.nz/pg-physics

### Have any questions? Contact the Student Hub auckland.ac.nz/student-hubs



# Tohu Paerunga Pūtaiao Wāina Postgraduate Wine Science

New Zealand has an excellent reputation for winemaking. If you want to be a part of this exciting industry, postgraduate study in Wine Science will give you an understanding of the science of winemaking and help prepare you for a career in this field.

You'll be based at the beautiful Goldwater Wine Science Centre on Waiheke Island, a 40-minute ferry trip from Auckland city, and you'll get hands-on experience in our winemaking facilities and in the vineyard, alongside opportunities to work with professional winemakers.

Courses available in this subject include:

- Winemaking in a New Zealand Setting
- The Science Behind Grape Production
- The Science Behind Winemaking
- Sensory Evaluation and Statistical Methods
- The Business of Wine Production
- Post-fermentation Processes in Winemaking

# Choosing your supervisor

During the first year of taught papers, those wanting to a proceed to the MWineSci (one additional semester) or the MSc (two additional semesters) will be able to discuss research options with potential supervisors. We guide you through this process during your year on Waiheke Island, and you will prepare a research proposal in your second semester.

# Scholarships

You can apply for a range of scholarships when you apply for postgraduate study in Science.



# Wine Science prepares students to work within the wine industry – either as a winemaker or in another role – in New Zealand and overseas.

It's also a great preparatory programme for other jobs, as our graduates learn the essential theory and practical skills to find employment in the wider hospitality industry.

With a postgraduate qualification in Wine Science you may decide to take seasonal vintage jobs, and experience two vintages in one year by working in both the Northern and Southern hemispheres.

Longer term, most of our graduates find permanent positions in winemaking, viticulture, research, laboratories or quality assurance positions. A few also choose sales and marketing positions in the wine industry.

- Our graduates have been employed in the following jobs:
- Assistant Winemaker, Ata Rangi Wines
- Managing director, Wine Home Pty Ltd
- Vineyard specialist, Felton Road Wines
- Director, Wintek NZ Co Ltd
- Laboratory manager, Craggy Range Winery Ltd
- Bottling manager, Treasury Wine Estates

# This subject is available in:

#### Postgraduate Diploma in Science

Master of Science

Master of Wine Science

Doctor of Philosophy in Chemistry, Food Science, Biological Sciences

You may also be interested in our programmes in Chemistry, Geography, Biomedical Science and Forensic Science.

# Find out more

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

science.auckland.ac.nz/pg-wine-sci

"I love how practical the course is – along with lectures, we pick our own grapes, process them and make our own wine."

# Ruairi Kavanagh

Postgraduate Diploma in Science in Wine Science.



Read Ruairi's full story at: science.auckland.ac.nz/ruairi-kavanagh

### Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

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