Medicinal Chemistry

Postgraduate Handbook 2018

THE UNIVERSITY OF AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

SCIENCE

Welcome to Medicinal Chemistry

Medicinal chemists design and develop drugs for the treatment of disease.

Medicinal Chemistry is one of the most rapidly developing areas within the discipline of chemistry, both globally and locally. It is the study of the design, biochemical effects, regulatory and ethical aspects of drugs for the treatment of disease. The aim of this programme is to produce graduates with an appropriate background in biology and pharmacology, built upon a strong chemistry foundation. The Medicinal Chemistry programme at the University of Auckland is the only programme of its kind in New Zealand.

Studying Medicinal Chemistry at honours level offers students a chance to expand on their undergraduate knowledge by providing a choice of postgraduate courses in chemistry, biological sciences and medical sciences. Additionally, students enhance their laboratory skills and put their understanding into practice by embarking on a year-long research project supervised by an academic staff member in the School of Chemical Sciences. The research is written up in the form of a dissertation.

This handbook outlines the courses offered and provides information to assist you in planning your degree. We look forward to you joining us in this exciting field of research.

DISTINGUISHED PROFESSOR MARGARET BRIMBLE
Director of Medicinal Chemistry

Chemistry is ranked

no. 7 ranked in Oceania

QS World University Rankings by Subject 2017

Postgraduate study options in Medicinal Chemistry

Medicinal Chemistry involves the design and synthesis of biologically active molecules with therapeutic properties suitable for clinical application.

BSc → **BSc(Hons)** → **PhD**

Bachelor of Science (Honours) in Medicinal Chemistry

Our BSc(Hons) provides focussed courses in medicinal chemistry together with a year-long research project.

This programme is an option for well-prepared students wishing to study Medicinal Chemistry in greater depth than a BSc. The BSc(Hons) can also provide a faster path to the PhD degree for students intending to perform advanced research.

Prerequisite

- A BSc major in Medicinal Chemistry and at least 90 points at Stage III or equivalent as approved by the School of Chemical Sciences.

Programme structure

- 15 points: CHEM 735
- 45 points: CHEM 710–780, BIOSCI 756, 757, 759, MEDSCI 708, 715, 716, 721, 722
- 60 points: CHEM 793 (Dissertation)

A candidate for BSc(Hons) must achieve a GPA average of 4.0 or higher to be awarded this degree.

www.science.auckland.ac.nz/medicinal-pg

Selection of supervisor

Students need to select a research supervisor in parallel with the application to enrol for BSc(Hons) in Medicinal Chemistry.

- Consult with at least three academic staff members on the research topics that interest you
- Fill out a supervisor selection form
- Submit this form to the by 20 November (for Semester 1) or 5 July (for Semester 2)

We will endeavour to offer students their first choice and will confirm supervisor selection to students as soon as possible after the application closing dates.

For more information:
www.chemistry.auckland.ac.nz/supervisors

Doctor of Philosophy (PhD)

Quick facts

Points per degree: 360 points

Full-time study: 3-4 years

Part-time study: 6-8 years

Degree structure: Research

Application closing dates: Apply at any time

Start date: start on the first day of the month

www.science.auckland.ac.nz/phd

Entry to PhD

The normal requirement for admission to the PhD is an honours degree with second class honours (first division or better), either MSc, BSc(Hons), or BTech. Candidates may be required to enrol in one or more courses concurrent with research work to complement either their research work or their background in the subject.

Our postgraduate programmes are designed to take students to the cutting edge of their discipline. A wide range of postgraduate research topics in Medicinal Chemistry are offered by the School of Chemical Sciences.

www.chemistry.auckland.ac.nz/medchem-research

Candidates with overseas qualifications should consult the school for advice and assessment of their qualifications.

www.international.auckland.ac.nz

Postgraduate Medicinal Chemistry courses		
Course code	**Title**	**Semester**
BIOSCI 756	Proteomics	S1
BIOSCI 757	Structural Biology	S2
BIOSCI 759	Molecular Cell Biology and Biomedicine	S1
CHEM 710	Advanced Physical Chemistry	S2
CHEM 720	Advanced Inorganic Chemistry	S1
CHEM 730	Modern Methods for the Synthesis of Bioactive Molecules	S1
CHEM 735	Advanced Medicinal Chemistry	S1
CHEM 738	Biomolecular Chemistry	S2
CHEM 740	Current Topics in Analytical Chemistry	S2
CHEM 750	Advanced Topics in Chemistry 1	S1/S2
CHEM 751	Advanced Topics in Chemistry 2	S1/S2
CHEM 760	Advanced Green Chemistry	S1
CHEM 770	Advanced Environmental Chemistry	S2
CHEM 780	Advanced Materials Chemistry	S2
CHEM 793	BSc(Hons) Dissertation in Chemistry	S1/S2
MEDSCI 708	Advanced Immunology and Immunotherapy	S1
MEDSCI 715	Molecular Toxicology	S1
MEDSCI 716	Advanced Drug Disposition and Kinetics	S1
MEDSCI 721	Advanced Toxicology	S2
MEDSCI 722	Clinical Pharmacology	S2

For course descriptions and more information: www.chemistry.auckland.ac.nz/pgcourses

Careers in Medicinal Chemistry

Our postgraduate students are trained in synthesis, reactivity and analysis of organic compounds and will develop the ability to provide valuable insight into the pharmacological, regulatory and ethical aspects of these bioactive molecules.

What roles could you expect?

- Academic
- Chemist
- Investigator
- Lab chemist
- Medicinal chemist
- Research scientist
- Researcher
- Scientist
- Synthetic chemist
- Teacher
- Technician
- Patent attorney

Possible employers include:

- Biomedical and pharmaceutical companies
- Crown Research Institutes
- Hospitals
- Government authorities and agencies
- Private research institutions
- Intellectual Property Law Firm

"Science always fascinated me, following my bachelors and masters with a PhD seemed like the next logical step in my academic career.

"My thesis topic is about the impact of a class of molecules called Advanced Glycation Endproducts on the properties of proteins. These molecules derive naturally in the human body where they modify functional proteins and participate in the pathogenesis of several diseases like diabetes.

"My studies are fairly interdisciplinary between organic synthesis for the preparation of the building blocks for peptide chemistry. If I'm successful these peptides can be used in different bio-assays and structural investigations via NMR-spectroscopy, which opens a lot of opportunities to work in new areas of research.

"I hope my research helps me to find a position in an international company."

***Jakob Gaar** is studying toward a PhD in Chemistry with a focus on Medicinal Chemistry.*

Helpful information

Academic dates
www.auckland.ac.nz/dates

Accommodation
www.accommodation.auckland.ac.nz

Apply for postgraduate study
www.auckland.ac.nz/applynow

Career Development and Employment Services
www.cdes.auckland.ac.nz

Childcare
www.auckland.ac.nz/childcare

Course advice and degree planning in Science
www.science.auckland.ac.nz/student-centre

Disability Services
www.disability.auckland.ac.nz

How to enrol
www.auckland.ac.nz/enrolment

Information for postgraduate students
www.postgraduate.ac.nz

International students
www.international.auckland.ac.nz

Libraries and Learning Services
www.library.auckland.ac.nz

Māori and Pacific students
www.science.auckland.ac.nz/tuakana

Need help?
www.askauckland.ac.nz

Postgraduate Students' Association
www.pgsa.org.nz

Rainbow Science Network for LGBTI students
www.science.auckland.ac.nz/rainbowscience

Scholarships and awards
www.scholarships.auckland.ac.nz
www.auckland.ac.nz/fees

Support for students
www.science.auckland.ac.nz/support

Questions about Medicinal Chemistry?
m.brimble@auckland.ac.nz

Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the University of Auckland Calendar, to ensure that they are aware of and comply with all regulations, requirements and policies.

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