

BIOMEDICAL SCIENCE

UNDERGRADUATE HANDBOOK

2016



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

SCIENCE

Welcome to Biomedical Science

Biomedical Science is jointly taught by the Faculties of Science and Medical and Health Sciences, with the programme spread over City and Grafton campuses.



This major within the Bachelor of Science is designed for very academically able students with an interest in emerging areas of biomedical science. The Biomedical Science programme provides an understanding of the scientific basis of health and disease in humans and animals. During the first three years, the programme will deliver rigorous scientific training in a range of disciplines and students will gain a unique insight into this important area of modern biological research.

This research-led field which is currently the most rapidly developing area in basic biological science attracts a high level of public interest. The University of Auckland is acknowledged as a centre of excellence in biomedical research and the options within the programme at Year Three reflect our particular strengths.

PROFESSOR LARRY CHAMLEY
Chair, Board of Studies for Biomedical Science



The Faculty of Science has

6317
students

12% of these are
international students

The University of Auckland is the highest ranked university in New Zealand by both Times Higher Education and QS rankings.



Undergraduate study options in Biomedical Science

Bachelor of Science (BSc) in Biomedical Science

This challenging and immensely rewarding major provides courses in Year 1 and 2 which deliver a strong foundation for a number of majors and professional careers (including Medicine), and a unique insight into the principles underlying this important area of modern biological research. Students may then follow options to specialise in areas such as cancer biology and therapeutics, molecular biology, cardiovascular biology, genetics and development, microbiology, immunology, neurobiology, nutrition, pharmacology, physiology or reproduction.

3

The average number of years it takes to complete a Bachelor of Science degree



For course planning and enrolment contact the Science Student Centre (scifac@auckland.ac.nz).

Bachelor of Science (Honours) in Biomedical Science

Students who achieve a GPA of 6.5 in Year 2, will be offered a provisional place in the Honours class subject to maintaining at least a B average in Year 3.

1

The average number of years it takes to complete a Bachelor of Science (Hons) degree



Students are strongly encouraged to consider postgraduate study.

www.science.auckland.ac.nz/biomed

Entry into other programmes from Biomedical Science

The Biomedical Common Year 1 serves as a gateway in part or whole to many other BSc majors: Biological Sciences, Medicinal Chemistry, Chemistry, Food Science and Nutrition, Pharmacology, Physiology, Psychology, and Sport and Exercise Science.

It is also the path to selection for several professional programmes:

- MBChB (Medicine)
www.fmhs.auckland.ac.nz/medicine
- Bachelor of Optometry
www.optometry.auckland.ac.nz
- Bachelor of Pharmacy
www.fmhs.auckland.ac.nz/pharmacy

Students should apply at the end of BSc (Biomedical Science) Part 1.

Note: There is no selection advantage between the BHSc and BSc (Biomedical Science) as a pathway into Medicine. Selection is based on overall GPA and performance in common core courses.

Students should choose their programme according to their ability, interest and preference.

Preparation for school leavers

Students will be selected on the basis of their rank score. The Faculty strongly recommends the school subjects Chemistry and Biology. English-rich subjects and a knowledge of Physics and Statistics is also recommended.

Guaranteed entry scores for school leavers for BSc(Biomedical Science)

- NCEA (Level 3) rank score 280
- CIE (taken in New Zealand) rank score 310
- IB rank score 33

Students who do not meet these scores may take preparatory studies on Chemistry, Physics, Biological Sciences and other subjects before gaining entry.

Planning your major

BSc

Year 1 Elective must be POPLHLTH 111 if intending to apply for MChB after Year 1 Biomedical Science

GEN ED

YEAR I ELECTIVE

MEDSCI 142

PHYSICS 160

CHEM 110

BIOSCI 107

BIOSCI 106

BIOSCI 101

Year 1

GEN ED

YEAR II ELECTIVE

YEAR II ELECTIVE

YEAR II ELECTIVE

MEDSCI 205

BIOSCI 203

BIOSCI 202

BIOSCI 201

Year 2

Elective: MEDSCI 201, 203, 204, 206, (BIOSCI 204 or MEDSCI 202), PSYCH 202

Any Stage Science

Any Stage Science

STATS 10X or BIOSCI 209

Stage III
BIOSCI, CHEM 390, 392 or PSYCH 305

MEDSCI 301-317

MEDSCI 301-317

BIOSCI 347-358

BIOSCI 347-358

Year 3

45 points from courses listed in the BSc Schedule

1. Courses in a minimum of three subjects listed in the BSc Schedule.

2. At least 180 points (12 courses) must be above Stage 1.

3. Up to 30 points (2 courses) may be taken from outside the Faculty.

4. 30 points (2 courses) must be taken from the appropriate General Education Schedules for BSc students.

5. At least 75 points must be at Stage III, of which 60 points must be in the majoring subject.

To view regulations for majors, and course descriptions, see www.calendar.auckland.ac.nz

BSc degree requires: 360 points (24 x 15 point courses). Each box represents one 15 point course.

It is recommended that students enrol in 8 courses each year.



Undergraduate Biomedical Science Courses

Year 1

BIOSCI 101	Essential Biology: From Genomes to Organisms	S1
BIOSCI 107	Biology for Biomedical Science: Cellular Processes and Development	S1
CHEM 110	Chemistry of the Living World	S1
POPLHLTH111	Population Health	S1
BIOSCI 106	Foundations of Biochemistry	S2
PHYSICS 160	Physics for the Life Sciences	S2
MEDSCI 142	Biology for Biomedical Science: Organ Systems	S2

Year 2

BIOSCI 201	Cellular and Molecular Biology	S1
BIOSCI 202	Genetics	S2
BIOSCI 203	Biochemistry	S2
MEDSCI 205	The Physiology of Human Organ Systems	S1
MEDSCI 201	Human Structure and Function	S1
MEDSCI 203	Mechanisms of Disease	S1
MEDSCI 204	Introduction to Pharmacology and Toxicology	S2
MEDSCI 206	Introduction to Neuroscience	S2
BIOSCI 204	Principles of Microbiology	S1
PSYCH 202	Biopsychology	S2
MEDSCI 202	Microbiology and Immunology	S1

For course descriptions and prerequisite information, go to www.science.auckland.ac.nz/biomed

Third year Biomedical Science options

Year 3

At least 30 points from BIOSCI 347-358

At least 30 points from MEDSCI 301-317

At least 15 points at Stage III from BIOSCI, MEDSCI, CHEM 390, 392 or PSYCH 305

Research area	Part 3 courses
Cancer Biology and Therapeutics	MEDSCI 301-303
	BIOSCI 351, 353, 354, 356, 358, CHEM 390, 392, MEDSCI 306, 314
Cardiovascular Biology	MEDSCI 309, 311, 316
	BIOSCI 350, 351, 353, 354, MEDSCI 301, 305, 317
Cellular and Molecular Biomedicine	BIOSCI 350, 351, 353
	MEDSCI 301, 303-305, 309, 316
Genetics and Development	BIOSCI 351, 354, 356
	BIOSCI 350, 353, MEDSCI 301, 312
Microbiology and Immunology	BIOSCI 349 MEDSCI 301, 314
	BIOSCI 347, 348, 350-353
Neurobiology	MEDSCI 304, 307, 316, 317
	BIOSCI 350, 351, 353, 354, MEDSCI 309, 312, PSYCH 305
Nutrition	BIOSCI 358, MEDSCI 312, 315
	BIOSCI 348, 351, 353, FOODSCI 301, MEDSCI 301, 306, 307, 314, 316
Reproduction, Growth and Metabolism	BIOSCI 351, MEDSCI 312, 313
	BIOSCI 350, 353, 354, 356, 358, MEDSCI 301, 314

For recommended Year 3 study topics, go to www.science.auckland.ac.nz/biomedyear3

Careers in Biomedical Science

Biomedical science has made transformative contributions over the past decade, stimulating growth in a wide range of industries including agriculture, pharmaceuticals, veterinary science and medical research.

You may find employment in the following areas or industries:

Biotechnology and pharmaceutical companies

University and academia

Private research laboratories

Crown Research Institutes

Government agencies

Environmental Risk Management Authority,

Ministry of Agriculture and Forestry

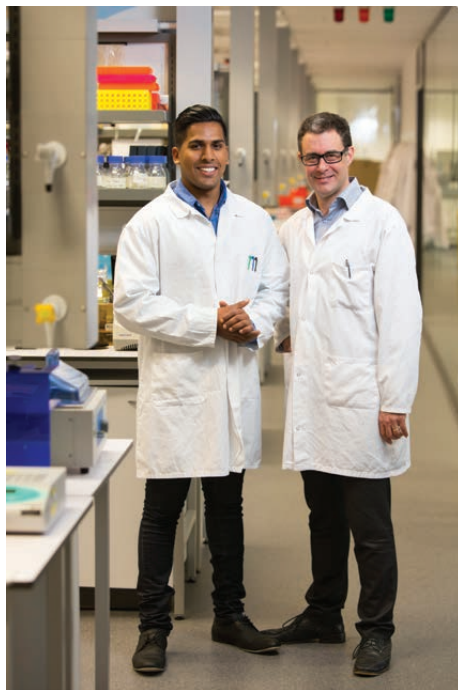
Ministry of Business, Innovation and Employment as:

- Analysts
- Laboratory technicians
- Scientific officers
- Teachers
- Researchers

Employment in biotechnology and pharmaceutical companies is especially buoyant in the United States and Europe, with significant growth expected in New Zealand.

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.



"Diabetes is fast becoming a major health concern world-wide. Strategies are needed urgently for early detection of people who are at risk."

Brenan's PhD research investigates why women of Chinese descent appear to be at high risk of developing diabetes. Using state-of-the-art metabolomics technologies, Brenan's work will see him travel to collaborate with researchers at the Singaporean Clinical Nutrition Research Centre.

"With the skills I gain, I believe I will be in a position to pursue a career either in academia or in the commercial sector. While I am motivated by the idea of continuing research and learning, I am also interested in the commercial application of this research. Through my PhD, I hope to find a position that encompasses both of these areas."

Brenan Durainayagam, Doctor of Philosophy candidate in Biomedical Science at the University's Liggins Institute, is pictured with his supervisor Professor David Cameron-Smith.



Helpful information

Academic dates	www.auckland.ac.nz/dates
Academic Integrity Course	www.auckland.ac.nz/academic-integrity
Accommodation	www.accommodation.auckland.ac.nz
Buy coursebooks	www.science.auckland.ac.nz/resource-centre
Career Development and Employment Services	www.auckland.ac.nz/careers
Course advice and degree planning in Science	www.science.auckland.ac.nz/student-centre
General education	www.auckland.ac.nz/generaleducation
How to apply	www.apply.auckland.ac.nz
How to enrol	www.auckland.ac.nz/enrolment
International students	www.international.auckland.ac.nz
Māori and Pacific students	www.science.auckland.ac.nz/tuakana
Need help?	www.askauckland.ac.nz
Rainbow Science Network for LGBTI students	www.science.auckland.ac.nz/rainbowsience
Science Scholars Programme	www.science.auckland.ac.nz/sciencescholars
Scholarships and awards	www.scholarships.auckland.ac.nz
Support for students	www.science.auckland.ac.nz/support

Applications close on December 8.

Questions about Biomedical Science major? scifac@auckland.ac.nz



Connect with us

Faculty of Science, The University of Auckland
Private Bag 92019, Auckland 1142, New Zealand

Phone: 0800 61 62 63 | Email: scifac@auckland.ac.nz

Web: www.science.auckland.ac.nz/biomed



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