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.

www.science.auckland.ac.nz/excellence
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.
### BSc

#### Year 1
- BIOSCI 101
- BIOSCI 106
- BIOSCI 107
- CHEM 110
- PHYSICS 160
- MEDSCI 142
- YEAR I ELECTIVE
- GEN ED

**Note:** Year 1 Elective must be POPLHLTH 111 if intending to apply for MBChB after Year 1 Biomedical Science.

#### Year 2
- BIOSCI 201
- BIOSCI 202
- BIOSCI 203
- MEDSCI 205
- YEAR II ELECTIVE
- YEAR II ELECTIVE
- YEAR II ELECTIVE
- GEN ED

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

#### Year 3
- BIOSCI 347-358
- BIOSCI 347-358
- MEDSCI 301-317
- MEDSCI 301-317
- Stage III BIOSCI, MEDSCI, CHEM 390, 392 or PSYCH 305
- STATS 10X or BIOSCI 209
- Any Stage Science
- Any Stage Science

**45 points from courses listed in the BSc Schedule**

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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.

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To view regulations for majors, and course descriptions, see [www.calendar.auckland.ac.nz](http://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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOSCI 101</td>
<td>Essential Biology: From Genomes to Organisms</td>
<td>S1</td>
</tr>
<tr>
<td>BIOSCI 107</td>
<td>Biology for Biomedical Science: Cellular Processes and Development</td>
<td>S1</td>
</tr>
<tr>
<td>CHEM 110</td>
<td>Chemistry of the Living World</td>
<td>S1</td>
</tr>
<tr>
<td>POPLHLTH111</td>
<td>Population Health</td>
<td>S1</td>
</tr>
<tr>
<td>BIOSCI 106</td>
<td>Foundations of Biochemistry</td>
<td>S2</td>
</tr>
<tr>
<td>PHYSICS 160</td>
<td>Physics for the Life Sciences</td>
<td>S2</td>
</tr>
<tr>
<td>MEDSCI 142</td>
<td>Biology for Biomedical Science: Organ Systems</td>
<td>S2</td>
</tr>
</tbody>
</table>

### Year 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
<td>BIOSCI 201</td>
<td>Cellular and Molecular Biology</td>
<td>S1</td>
</tr>
<tr>
<td>BIOSCI 202</td>
<td>Genetics</td>
<td>S2</td>
</tr>
<tr>
<td>BIOSCI 203</td>
<td>Biochemistry</td>
<td>S2</td>
</tr>
<tr>
<td>MEDSCI 205</td>
<td>The Physiology of Human Organ Systems</td>
<td>S1</td>
</tr>
<tr>
<td>MEDSCI 201</td>
<td>Human Structure and Function</td>
<td>S1</td>
</tr>
<tr>
<td>MEDSCI 203</td>
<td>Mechanisms of Disease</td>
<td>S1</td>
</tr>
<tr>
<td>MEDSCI 204</td>
<td>Introduction to Pharmacology and Toxicology</td>
<td>S2</td>
</tr>
<tr>
<td>MEDSCI 206</td>
<td>Introduction to Neuroscience</td>
<td>S2</td>
</tr>
<tr>
<td>BIOSCI 204</td>
<td>Principles of Microbiology</td>
<td>S1</td>
</tr>
<tr>
<td>PSYCH 202</td>
<td>Biopsychology</td>
<td>S2</td>
</tr>
<tr>
<td>MEDSCI 202</td>
<td>Microbiology and Immunology</td>
<td>S1</td>
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</tbody>
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For course descriptions and prerequisite information, go to [www.science.auckland.ac.nz/biomed](http://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

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

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.

“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.

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.
Helpful information

Applications close on December 8.

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