

BIOTECHNOLOGY

www.sci.waikato.ac.nz/study/subjects/biotechnology

Biotechnology is the application of science and engineering to develop useful products from biological materials. Biotechnology is a very broad discipline, ranging from cloning to cheese making, and producing products from antibiotics to beer. This programme examines extraction, recovery, and purification of biochemicals from the meat, dairy, and other industries. It explores technological applications at the industrial level as well as the molecular level.

CONTACTS FOR BIOTECHNOLOGY

Biotechnology is jointly taught between the Department of Biological Sciences and the School of Engineering.

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Degrees

Biotechnology is an interdisciplinary major for the Bachelor of Science or Bachelor of Science (Technology) degrees.

Biotechnology Interdisciplinary Major

General Structure of a Biotechnology Interdisciplinary Major for the BSc and BSc(Tech) degrees

100 LEVEL	BIOL101 15 Points	CHEM102 15 Points	ENGG180 or ENMP102 15 points	<p>100 Level – Recommended prerequisites: BIOL101 Cellular and Molecular Biology, CHEM102 Chemical Change and Organic Chemistry, and one of: ENGG180 Foundations of Engineering or ENMP102 Introduction to Materials Science and Engineering.</p> <p>200 Level – *Choose from: BIOL241 Microbiology: Form, Function and Metabolism, BIOL251 Biochemistry, ENMP221 Engineering Thermodynamics, and ENMP222 Biotechnology: Food and Bioresources.</p> <p>300 Level – **Choose from: BIOL341 Microbial Physiology and Ecology, BIOL351 Advanced Biochemistry, ENMP321 Process Engineering and Design, and ENMP322 Biotechnology: Food and Bioresources.</p>
200 LEVEL	BIOL or ENMP* 20 points	BIOL or ENMP* 20 points	BIOL or ENMP* 20 points	
300 LEVEL	BIOL or ENMP** 20 points	BIOL or ENMP** 20 points	BIOL or ENMP** 20 points	

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Specialisations

Students may undertake the following specialisations for the BSc and BSc(Tech) major in Biotechnology.

» Agribusiness	*
» Science International	page 157
» Te Pūtaiao me ngā take Māori	page 162

**Enrolment in this specialisation should be completed in consultation with both the Faculty of Science & Engineering and the Waikato Management School.*

Choosing Papers

Biotechnology Interdisciplinary Major

To complete a major in Biotechnology, students must complete 120 points above 100 Level, including 60 points at 300 Level, from the below papers.

100 Level – Papers are worth 15 points.

Prerequisites

- » BIOL101B – Cellular and Molecular Biology
- » CHEM102B – Chemical Change and Organic Compounds

And at least one of:

- » ENGG180A – Foundations of Engineering
- » ENMP102B – Introduction to Materials Science and Engineering

Students are strongly advised to include some of the following papers

- » BIOL102A – The Biology of Organisms
- » CHEM101A – Chemical Concepts
- » MATH101A/B/C/D – Introduction to Calculus or
MATH102A/B/C/D – Introduction to Algebra
- » MATH165A – General Mathematics
- » STAT111B – Statistics for Science or
STAT121A/S – Introduction to Statistical Methods

200 Level – Papers are worth 20 points unless specified.

*Choose 60 points from:

- » BIOL241A – Microbiology: Form, Function and Metabolism
- » BIOL251A – Biochemistry
- » ENMP221A – Engineering Thermodynamics
- » ENMP222B – Biotechnology: Food and Bioresources

Recommended papers

- » BIOL210B – Introduction to Genetics
- » ENMP241B – Environmental Technology 1

300 Level – Papers are worth 20 points unless specified.

*Choose 60 points from:

- » BIOL341B – Microbial Physiology and Ecology
- » BIOL351A – Advanced Biochemistry
- » ENMP321B – Process Engineering and Design
- » ENMP322B – Biotechnology

Recommended papers

- » BIOL362C – Molecular Biology and Biotechniques
- » ENMP341A – Environmental Technology 2

Note(s): For descriptions of individual papers refer to the following subjects: BIOL Biological Sciences; CHEM Chemistry; ENGG Engineering; ENMP Materials & Processing. For descriptions of papers with subject codes COMP, MATH or STATS, refer to the **Computing & Mathematical Sciences Handbook** or the **University Calendar**.

Timetable Clashes

Your selection of papers may depend on your timetable. You will not usually be permitted to take papers that have lecture clashes. Laboratory clashes can usually be resolved. You should initially contact the relevant department if you have a laboratory clash.

BSc(Tech) Work Placement Papers

For details refer to *Work Placements*.