

# CHEMICAL & BIOLOGICAL ENGINEERING

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[www.eng.waikato.ac.nz](http://www.eng.waikato.ac.nz)

*The Chemical & Biological Engineering programme has a core of process engineering along with a set of papers specific to one of biological processing, chemical processing, materials or environmental processing. It covers processing and producing a diverse range of biochemicals, chemicals and materials or environmental treatment. The programme provides an excellent basis for a career in bioprocessing, food and pharmaceutical industries, materials and chemical industries and environmental treatment. A major focus is on processing and developing high-value products. There is a major research, design and development project in the fourth year of the programme.*

This specified programme has full IPENZ accreditation, making the Bachelor of Engineering a nationally and internationally recognised degree.

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## CONTACTS FOR THE SCHOOL OF ENGINEERING

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## Degrees

This specified programme is available for the Bachelor of Engineering or Bachelor of Engineering (Honours) degrees.

### General Structure of the Chemical & Biological Engineering Programme

YEAR 1	ENGG180 15 points	ENMP102 15 points	MATH101 15 points	MATH102 15 points	PHYS103 15 points	COMP103 15 points	CHEM102 15 points	ELECTIVE * 15 points
	ENGG282 10 points	ENGG283 10 points	ENMP221 20 points	ENMP223 20 points	ENGG279 0 points	ENGG371 0 points	ELECTIVE * 20 points	ELECTIVE * 20 points
YEAR 2	ENMP282 10 points	ENGG284 10 points						
	ENGG381 20 points	ENMP321 20 points	ENMP323 20 points	ENGG285 10 points plus either MATH257 10 points, or MATH259 10 points	ENGG379 0 points	ENGG372 0 points	ELECTIVE * 20 points	ELECTIVE * 20 points
YEAR 3	ENMP422 20 points	DESIGN PROJECT ENGG482 OR ENGG492 60 points				ELECTIVE ** 20 points		ELECTIVE * 20 points

 Design Project – A major design project (60 points).

 \*Stream specific elective.

\*\*Choose 20 points from papers at 200 level or above.

### Streams for the Chemical & Biological Engineering Programme

	Biological Processing		Chemical Processing		Materials		Environmental	
YEAR 1		BIOL101 15 points		CHEM101 15 points		CHEM101 15 points		ENVS101 15 points
YEAR 2	BIOL251 20 points	CHEM201 20 points	ENMP211 20 points	CHEM201 20 points	ENMP211 20 points	ENMP213 20 points	CHEM204 20 points	ENMP241 20 points
YEAR 3	ENMP322 20 points	ENMP325 20 points	ENMP322 20 points	ENMP311 20 points	ENMP313 20 points	ENMP311 20 points	CHEM306 20 points	ENMP341 20 points
YEAR 4		ENMP427 20 points		ENMP427 20 points		ENMP411 10 points ENMP407 10 points		ENMP442 20 points

# CHEMICAL & BIOLOGICAL ENGINEERING

## Year 1 – Papers are worth 15 points.

- » COMP103A/B/C – Introduction to Computer Science
- » ENGG180A – Foundations of Engineering
- » ENMP102B – Introduction to Materials Science and Engineering
- » MATH101A/B/C/D – Introduction to Calculus
- » MATH102A/B/C/D – Introduction to Algebra
- » PHYS103B – Physics for Scientists and Engineers 1
- » CHEM102B – Chemical Change and Organic Compounds

Plus 15 points from Stream appropriate papers.

## Year 2 – Papers are worth 20 points unless specified.

- » ENGG279B – Preparation for the Professional Work Place (0 points)
- » ENGG282B – Engineering Design (10 points)
- » ENGG283A – Linear Algebra for Engineers (10 points)
- » ENGG284B – Differential Equations for Engineers (10 points)
- » ENGG371C – Engineering Placement 1 (0 points)
- » ENMP221A – Engineering Thermodynamics
- » ENMP223B – Thermofluids
- » ENMP282A – Science and Engineering Management A (10 points)

Plus 40 points from Stream appropriate papers.

## Year 3 – Papers are worth 20 points unless specified.

- » ENGG285A – Multivariable Calculus for Engineers (10 points)
- » ENGG372C – Engineering Placement 2 (0 points)
- » ENGG379A – Reflection on Professional Workplace Experience (0 points)
- » ENGG381A – Engineering Statistics
- » ENMP321B – Process Engineering and Design
- » ENMP323A – Transport Processes and Unit Operations
- » MATH257A – Computational Mathematics, or  
MATH259B – Mathematical modelling (10 points)

Plus 40 points from Stream appropriate papers.

## Year 4 – Papers are worth 20 points unless specified.

- » (BE) ENGG482A/B/C/Y – Engineering Design and Management Project (60 points) or
- » (BE(Hons)) ENGG492A/B/C/Y – Honours Research and Management Project (60 points)
- » ENMP422A – Process Modelling and Control

Plus 20 points from Stream appropriate papers.

Plus 20 points from papers at 200 Level or above.

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