MASSEY UNIVERSITY
TE KUNENGA KI PŪREHŪROA
UNIVERSITY OF NEW ZEALAND

YOUR 2018 GUIDE TO SCIENCES AT AUCKLAND

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UPDATED JANUARY 2017

WELCOME

The demand for people who understand the sciences and technology continues to grow. Now, more than ever before, the scale of economic, technological, scientific, environmental, social, cultural and political change is enormous. Massey offers an education that combines rigorous academic study and the excitement of discovery, with the support and intellectual stimulation of a diverse community in a truly unique interdisciplinary atmosphere.

At our Auckland campus, you will become a student in a community of world-leading research groups. Our excellent teachers will guide you through your studies.

Our degrees provide the rigorous academic study and the skill-based learning employers want. We're flexible with our offerings so you can focus on what you are passionate about. This guide is a starting point aimed at helping you think about your options. We encourage you to explore it and to talk with our friendly staff for further guidance.

Science is a great study choice and we look forward to welcoming you on our Auckland campus.

Professor Ray Geor
Pro Vice-Chancellor College of Sciences

YOUR GUIDE TO AUCKLAND CAMPUS

OPEN DAY: 12 AUGUST 2017

Massey's Auckland campus is at Albany, set in the heart of one of New Zealand's fastest-growing regions. It is the home of New Zealand's first university trading room. This state-of-the-art facility provides would-be fund managers with a truly innovative learning environment and ensures they will be job-ready upon graduation.

AUCKLAND CAMPUS

STUDENTS
6353

QUALIFICATIONS UNDERGRADUATE TO POSTGRADUATE
89

UNDERGRADUATE MAJORS
67

THE INNOVATION CAMPUS

The campus is located a short drive from the heart of New Zealand's largest and most vibrant city, and is surrounded by a thriving business and retail community, which provides many opportunities for students seeking part-time employment.

The campus offers a performing arts theatre for expressive arts students, a trading room creating an applied experience for finance students, and much more. There is free on-campus parking, an excellent bus service, awesome facilities including a recreation centre, science labs, modern library, funky cafés and student central, where students hang out.

In 2015 the 292-bed student accommodation village (Te Ohanga) opened. It is located in the heart of the campus so that students only have a very short walk to the library, lecture theatres and the dining hall.

massey.ac.nz/auckland

UNDERGRADUATE DEGREE OPTIONS:

- Accountancy
- Applied Economics
- Arts
- Business
- Communication
- Construction (page 62)
- Education
- Engineering (page 54)
- Food Technology (page 58)
- Information Sciences (page 42)
- Natural Sciences (page 46)
- Nursing
- Retail and Business Management
- Sciences (page 06)
- Social Work
- Speech and Language Therapy
- Sport Management
- Vet first semester (page 50)

HE AHA TE TOHU? WHAT IS A DEGREE?

A degree is made up from individual 'courses', most of which are worth 15 credits each. Massey has a large number of degrees to choose among. Students usually study eight courses per year for three years to earn a 360-credit degree like the Bachelor of Information Sciences. A four-year degree like the Bachelor of Engineering with Honours is made up of 480 credits. A five-year degree like the Bachelor of Veterinary Science requires 600 credits. You can view the structure of our degrees online: **study.massey.ac.nz**

UNDERGRADUATE QUALIFICATIONS

If you don't want to study for a degree, you can choose from a range of other undergraduate qualifications with our diplomas and certificates.

MAJORS, DOUBLE MAJORS AND MINORS

When planning your course of study, most degrees allow you to choose a major (your speciality) and/or a minor in particular subject areas. Some degrees allow you to graduate with a double major by completing the requirements for two subject areas within one degree.

CONJOINT DEGREE PROGRAMMES

We offer conjoint Sciences degree programmes, which allow you to graduate with two degrees at the end of four years of full-time study. These programmes are:

- Bachelor of Arts / Bachelor of Science
- Bachelor of Business / Bachelor of Science

If you're applying straight from school, you'll need a high level of achievement in NCEA Level 3 (or equivalent) to gain admission. Alternatively, you may be admitted if you achieve good grades in your first year in a single degree course (ie Bachelor of Arts, Bachelor of Business or Bachelor of Science).

You should seek specific planning advice from our experts for your first year if you're considering enrolment in a conjoint degree in your second year at Massey.

AM I READY FOR STUDY?

I AM UNDER 20 AND HAVE UNIVERSITY ENTRANCE BUT AM MISSING (OR FEEL I WILL MISS) A FEW IMPORTANT SUBJECTS

I would like to study a...

BVSc
BVetTech
BE(Hons)
BFoodTech(Hons)
BNatSc
BSc *majoring in:*
Chemistry, Statistics, Maths, Physics

ENROL IN A...
Diploma in Science and Technology, or
Certificate in Science and Technology
with the subjects you need.

BSc (majors other than in column to the left)
BInfSc
BConst
BAgriScience
BAgriCommerce

I have plenty of time before I want to start university

TAKE AN INTRODUCTORY COURSE
Certificate of Proficiency
You need to take preparatory course(s)

I am finishing high school and wish to start university in February of the next year

JOIN SUMMER SCHOOL
Certificate of Proficiency
Take preparatory course(s) in Summer School.
If the results of your UE show that you no longer need these subjects you can withdraw.
See: **massey.ac.nz/summerschool**

I AM UNDER 20 AND DO NOT HAVE UNIVERSITY ENTRANCE (UE)

I have...

- Achieved at least 50 credits in approved subjects at NCEA Level 2 or above. These include at least one of:
  - English: 18 credits at Level 1 or higher
  - Mathematics: 10 credits at NCEA Level 1 or higher.

I would like to study a...

BSc *majoring in:*
Chemistry, Maths, Statistics, Physics
BVSc
BVetTech
BE(Hons)
BFoodTech(Hons)
BNatSc

APPLY FOR THE...
Certificate in Foundation Studies
Take science-focused courses, then progress to the **Diploma in Science and Technology**.

BSc *(majors other than in column to the left)*
BInfSc
BConst
BAgriScience
BAgriCommerce

APPLY FOR THE...
Certificate in Foundation Studies
Take science-focused courses.

- Great NCEA Level 2
- Plenty of sciences standards at Excellence or Merit
- Literacy and Numeracy
- I wish to progress to university soon.

I would like to study a...

BSc *majoring in:*
Chemistry, Maths, Statistics, Physics
BVSc
BVetTech
BE(Hons)
BFoodTech(Hons)
BNatSc

TALK TO US
For these specialist qualifications, missing Year 13 is not advisable. In special circumstances you may be admitted to a **Diploma in Science and Technology** in preparation for one of these qualifications.

BSc *(majors other than in column to the left)*
BInfSc
BConst
BAgriScience
BAgriCommerce

APPLY FOR...
Discretionary Entrance
You may enter either the **Diploma in Science and Technology** or **Certificate in Science and Technology**
NOTE: If you have progressed more than halfway through the NCEA Level 3 year you will not be eligible for discretionary entrance.

- 14 NCEA Level 3 credits in an approved subject
- 10 credits each in two other subjects
- Literacy and numeracy

I would like to study a...

BSc *majoring in:*
Chemistry, Maths, Statistics, Physics
BVSc
BVetTech
BE(Hons)
BFoodTech(Hons)
BNatSc

APPLY FOR THE...
Certificate of University Preparation
You should then progress to the **Diploma in Science and Technology** in preparation for one of these qualifications

BSc *(majors other than in column to the left)*
BInfSc
BConst
BAgriScience
BAgriCommerce

APPLY FOR THE...
Certificate of University Preparation

BACHELOR OF SCIENCE
BSc

Science is increasingly interdisciplinary and there is a global need for people to help solve big issues like climate change, population explosion, obesity and pressures on resources like land and water.
This requires both specialists and people with an understanding of several sciences and technologies. We provide study pathways for both, and the flexibility to choose your study programme year by year. Some examples feature below. Of course, you may think of more. We encourage you to study what you want, and realise you may want to keep your options open while you learn more about the study areas. You may wish to take a traditional study path and stick to the major and minor you enrol in when you begin your degree, or re-think your choices after your first year.

MAJORS AND MINORS AT AUCKLAND

- Biological Sciences (page 16)
- Biostatistics (minor only – see 'Statistics' on page 39)
- Chemistry (page 18)
- Computer Science (page 20)
- Data Science (page 21)
- Ecology (page 22)
- Environmental Science (page 24)
- Exercise and Sport Science (page 26)
- Genetics (page 27)
- Human Nutrition (page 28)
- Logistics and Supply Chain Management (page 30)
- Marine Ecology (page 31)
- Mathematics (page 32)
- Physics (minor only) (page 34)
- Physiology (page 36)
- Psychology (page 38)
- Statistics (page 39)
- Zoology (page 40)

BSc STUDY PATHWAYS AT AUCKLAND

- **Biological Chemistry**
  Major: Chemistry
  Major or Minor: Genetics.
- **Global Biodiversity**
  Double Major: Ecology and Zoology
- **Marine Ecology**
  Major: Marine Ecology
- **Nutrition and Genetics**
  Majors/minors: Human Nutrition, Genetics
  Scientific Modelling
  Majors: Data Science, Mathematics
  Minors: Physics and Computer Science
- **Structure of Matter**
  Major: Chemistry;
  Major or Minor: Mathematics
- **Physiology, Exercise and Sport Science**
  Majors: Physiology, Exercise and Sport Science
- **Nutrition and Psychology**
  Majors: Human Nutrition and Psychology
- **Logistics, IT and Management**
  Major: Logistics and Supply Chain Management;
  Minors: Management and Information Technology

BIOLOGICAL CHEMISTRY

This programme is for you if you wish to pursue interests in chemistry that have a biological nature such as biochemical and pharmaceutical chemistry applications.

CAREERS

Environmental monitoring, biotechnology, research in Crown Research Institutes and Universities, applied research and development in industries, quality control, chemical analysis, applications in agricultural and food science, teaching in chemistry, genetics and biology, patent attorney in legal firms, science writer, policy advisers for government organisations, chemistry and technical sales and other wide ranging applications in industries or businesses requiring applied analytical skills. The first-year of study for Biological Chemistry also leads to majors and minors in:

- Biostatistics (see the Statistics major on page 39)
- Chemistry (page 18)
- Genetics (page 27)
- Mathematics (page 32)
- Statistics (page 39)

CONTACT

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BIOLOGICAL CHEMISTRY – RECOMMENDED STUDY

BSC MAJOR CHEMISTRY AND MAJOR/MINOR GENETICS

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	123.102 Chemistry and the Material World
	162.101 Biology of Cells	122.102 Biochemistry of Cells
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	Semester One	**Semester Two**
YEAR TWO	123.206 Environmental and Analytical Chemistry	123.201 Chemical Energetics
	123.271 Molecules to Materials	123.210 Organic Chemistry Perspectives
	122.231 Genes and Gene Expression	122.233 Metabolic Biochemistry*
	203.212 Principles of Genetics	203.203 Human Genetics
	Semester One	**Semester Two**
YEAR THREE	123.331 Advanced Physical and Computational Chemistry	123.310 Advanced Concepts in Organic Chemistry
	123.332 Advanced Topics in Chemistry	123.332 Advanced Topics in Chemistry
	247.300 Research in Biosciences**	203.343 Advanced Genetics and Genomics
	203.342 Molecular and Cellular Biology	203.340 Applied Molecular Biology

Courses required for the major in Chemistry Courses required for the minor in Genetics

*162.214 Biology of Microorganisms has to be taken instead of 122.233 for a major in Genetics
** 203.341 Genetics and Evolution has to be taken instead of 247.300 for a major in Genetics

GLOBAL BIODIVERSITY

Understanding organisms and their environment is key to managing and conserving populations and ecosystems. Massey has world class researchers teaching you, and provides the only formal ornithological training at a university in New Zealand. Our class sizes enable excellent interaction with your lecturers and there's lots of great field-work giving you practical skills for your career.

CAREERS

Environmental consulting (private or government), scientific research, animal husbandry, natural heritage specialist, biosecurity, wildlife conservation.

The first-year of study also leads to majors and minors in:

- Biological Sciences (page 16)
- Biostatistics (minor) (see the Statistics major on page 39)
- Ecology (page 22)
- Environmental Science (page 24)
- Genetics (page 27)
- Marine Ecology (page 31)
- Zoology (page 40)

CONTACT

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GLOBAL DIVERSITY – RECOMMENDED STUDY

BSC DOUBLE MAJOR IN ECOLOGY AND ZOOLOGY

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	120.101 Biology of Plants
	162.101 Biology of Cells	122.102 Biochemistry of Cells (or elective)
	199.101 Biology of Animals	194.101 Essentials of Mammalian Biology
	Semester One	**Semester Two**
YEAR TWO	196.205 Ecology and Conservation	120.218 The Flora of New Zealand
	199.206 The Fauna of New Zealand	162.214 Biology of Microorganisms
	161.250 Data Analysis for Biologists	196.217 Evolutionary Biology
	199.211 Invertebrate Zoology	199.212 Vertebrate Zoology
	Semester One	**Semester Two**
YEAR THREE	196.350 Quantitative Ecology	196.318 Molecular Ecology (or elective)
	199.330 Ornithology	196.326 Topics in Marine Ecology
	196.327 Marine Mammalogy (or elective)	199.312 Behavioural Ecology
	247.300 Research Project (or elective)	199.320 Selected Topics in Zoology

Courses required for the major in Ecology

Courses required for the major in Zoology

Courses required for both majors

MARINE ECOLOGY

Marine Ecology investigates the biological principles and processes that are the basis of all forms of life in the sea. You learn how marine organisms interact with one another and their environment. Our Massey Marine Ecology team is well known for its research on marine mammals – particularly anthropogenic effects on populations – as well as the sub-tidal ecology of New Zealand's temperate reefs.

CAREERS

Environmental consulting (private or government), fisheries officer, scientific research, wildlife conservation.

The first-year of study also leads to majors and minors in:

- Biological Sciences (page 16)
- Biostatistics (minor) (see the Statistics major on page 39)
- Ecology (page 22)
- Environmental Science (page 24)
- Genetics (page 27)
- Marine Ecology (page 31)
- Zoology (page 40)

CONTACT

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MARINE ECOLOGY – RECOMMENDED STUDY

BSC MAJOR MARINE ECOLOGY AND ELECTIVES IN ZOOLOGY, ECOLOGY AND/OR BIOSTATISTICS

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	120.101 Biology of Plants (or elective)
	162.101 Biology of Cells	122.102 Biochemistry of Cells (or elective)
	199.101 Biology of Animals	194.101 Essentials of Mammalian Biology
	Semester One	**Semester Two**
YEAR TWO	161.250 Data Analysis for Biologists	196.225 Introductory Marine Biology
	194.245 Animal Form and Function	196.217 Evolutionary Biology
	196.205 Ecology and Conservation	199.212 Vertebrate Zoology
	199.211 Invertebrate Zoology	162.214 Biology of Microorganisms (or elective)
	Semester One	**Semester Two**
YEAR THREE	196.350 Quantitative Ecology	196.318 Molecular Ecology* (or elective)
	196.327 Marine Mammalogy	196.326 Topics in Marine Ecology
	199.330 Ornithology (or elective)	199.312 Behavioural Ecology* (or elective)
	247.300 Research Project (or elective)	161.331 Biostatistics (or elective)

Courses required for the major in Marine Ecology

* Select at least one of these courses

NUTRITION AND GENETICS

Genetics is the science of genes, heredity, and variation in living organisms. Genetic research helps us understand why certain diseases are prevalent and how genetic mutations can affect our health (eg. lactase persistence). Human nutrition involves the study of interactions between nutrients and the human body. Knowledge of how food components are digested, metabolised and utilised explains their effects on genes, cells, organs and the whole person.
Massey specialises in a modern approach to genetics. In this age where DNA sequencing and genomics are becoming increasingly important, Massey provides a range of first-class facilities for nutrition study and research.

CAREERS

Forensics, medical science, genetic counselling, industrial research, biotechnology, biosecurity, registered nutritionist, public health, policy adviser. The first-year of this study also leads to majors and minors in:

- Exercise and Sport Science (page 26)
- Genetics (page 27)
- Human Nutrition (page 28)
- Physiology (page 36)

CONTACT

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NUTRITION AND GENETICS – RECOMMENDED STUDY

DOUBLE MAJOR: HUMAN NUTRITION AND GENETICS

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	214.131 Intro to Food and Nutrition
	162.101 Biology of Cells	122.102 Biochemistry of Cells
	234.121 Structural Kinesiology	194.101 Essentials of Mammalian Biology
	Semester One	**Semester Two**
YEAR TWO	151.231 Food Chemistry for Nutrition	151.232 Nutrition and Metabolism
	194.241 Physiological Control Systems	122.233 Metabolic Biochemistry
	122.231 Genes and Gene Expression*	203.203 Human Genetics*
	203.212 Principles of Genetics*	196.217 Evolutionary Biology*
	Semester One	**Semester Two**
YEAR THREE	151.331 Maternal and Child Nutrition	151.333 Adult Nutrition and Positive Ageing
	151.332 Nutrition for Sport and Performance	151.334 Nutrition Communication and Promotion
	203.341 Genetics and Evolution	203.340 Applied Molecular Biology
	203.342 Molecular and Cellular Biology	203.343 Advanced Genetics and Genomics

Courses required for the major in Human Nutrition

Courses that are required for the major in Genetics

* 162.214 Biology of Microorganisms may be taken in place of one of 122.231, 203.203, 203.212, or 196.217

SCIENTIFIC MODELLING

Scientific modelling is concerned with making aspects of the world around us easier to understand by constructing mathematical models and computer simulations to analyse scientific problems. Mathematics teaches you how to think, reason, and analyse and is essential in any career where logic and quantitative skills are needed. Physics is the branch of science that investigates matter and energy. Computer Science provides a strong applied background in the development of software applications. Alternative electives are possible.

CAREERS

Weather forecasting, market research, insurance, business analysis, environmental modelling, health and safety analysis and training, education, scientific research.

The first-year of this study also leads to Bachelor of Science majors and minors in:

- Computer Science (page 20)
- Data Science (page 21)
- Software Engineering (BInfSc only) (page 42)
- Mathematics (page 32)
- Physics (minor only) (page 34)
- Statistics (page 39)

CONTACT

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SCIENTIFIC MODELLING – RECOMMENDED STUDY

BSC MAJOR: MATHEMATICS MINOR: PHYSICS AND COMPUTER SCIENCE

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.120 Introductory Statistics
	159.101 Programming Fundamentals	159.102 Computer Science Fundamentals
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	124.111 Physics for Life Sciences	124.102 Physics I(b)
	Semester One	**Semester Two**
YEAR TWO	160.204 Differential Equations I	160.203 Calculus
	160.211 Linear Algebra	160.212 Discrete Mathematics
	124.226 Quantum and Statistical Physics	124.261 Nonlinear Physics and Chaos
	159.201 Algorithms and Data Structures	159.234 Object-oriented Programming
	Semester One	**Semester Two**
YEAR THREE	160.301 Analysis	160.302 Algebra
	160.318 Differential Equations II	160.319 Mathematical Modelling
	124.350 Computational Physics	159.339 Internet Programming
	159.302 Artificial Intelligence	159.333 Individual Programming Project

Courses required for the major in Mathematics

Courses required for the minor in Physics

Courses required for the minor in Computer Science

STRUCTURE OF MATTER

This is for you if your interests are in chemistry and the physical sciences, especially in analytical, materials, environmental and physical chemistry. You will gain an understanding of chemistry relating to the structure, analysis and behaviour of matter.

CAREERS

Chemical analysis, environmental monitoring, actuary, operations or information analyst, chemistry, physics and mathematics teaching, quality control, patent attorney in legal firms, science writer, policy advisers for government organisations, research in Crown Research Institutes and universities, applied research and development in industries, chemistry and technical sales, and other wide ranging applications in industries and businesses requiring applied analytical skills.

The first-year of this study also leads to majors and minors in:

- Chemistry (page 18)
- Mathematics (page 32)
- Physics (minor only) (page 34)
- Statistics (page 39)

CONTACT

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STRUCTURE OF MATTER – RECOMMENDED STUDY

BSC MAJOR: CHEMISTRY, AND MAJOR/MINOR: MATHEMATICS

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.120 Introductory Statistics or 159.101 Programming Fundamentals
	123.101 Chemistry and Living Systems	123.102 Chemistry and the Material World
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	124.111 Physics for Life Sciences	124.102 Physics I(b)
	Semester One	**Semester Two**
YEAR TWO	123.206 Environmental and Analytical Chemistry	123.201 Chemical Energetics
	123.271 Molecules to Materials	123.210 Organic Chemistry Perspectives
	160.204 Differential Equations I	160.203 Calculus
	160.211 Linear Algebra	124.261 Nonlinear Physics and Chaos or 160.212 Discrete Math
	Semester One	**Semester Two**
YEAR THREE	123.331 Advanced Physical and Computational Chemistry	123.310 Advanced Concepts in Organic Chemistry
	123.332 Advanced Topics in Chemistry	123.332 Advanced Topics in Chemistry
	160.318 Differential Equations II	160.319 Mathematical Modelling
	124.226 Quantum and Statistical Physics or elective	134.308 Philosophy of Science or an elective

Courses required for the major in Chemistry

Courses that are required for the minor in Mathematics (some choice is possible)

PHYSIOLOGY, EXERCISE AND SPORT SCIENCE

Study a broad range of subjects relating to sport and exercise including biomechanics, exercise physiology and training science. This foundation helps you understand how to enhance sport performance and improve health and fitness. Combine this with Physiology – the study of cell and tissue function in living systems

CAREERS

Sport scientist working with athletes, teams, coaches and regional sporting bodies; providing exercise and health guidelines for fitness centres, medical centres, clinics and hospitals; teaching at secondary and tertiary level; medical and health writing; research at universities or research institutes.

The first-year of this study also leads to majors and minors in:

- Exercise and Sport Science (page 26)
- Genetics (page 27)
- Human Nutrition (page 28)
- Physiology (page 36)

RECOMMENDED BACKGROUND

- 14 credits in NCEA Level 3 chemistry
- 14 credits in NCEA Level 3 biology.

CONTACT

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PHYSIOLOGY, EXERCISE AND SPORT SCIENCE – RECOMMENDED STUDY

BSC MAJORS: PHYSIOLOGY AND EXERCISE AND SPORT SCIENCE

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	122.102 Biochemistry of Cells
	162.101 Biology of Cells	194.101 Essentials of Mammalian Biology
	234.121 Structural Kinesiology	175.102 Psychology as a Natural Science
	Semester One	**Semester Two**
YEAR TWO	194.241 Physiological Control Systems	151.232 Nutrition and Metabolism
	194.245 Animal Form and Function	194.242 Physiology of Mammalian Organs
	234.223 Exercise Physiology	234.222 Sport Biomechanics
	Elective	122.233 Metabolic Biochemistry
	Semester One	**Semester Two**
YEAR THREE	151.332 Nutrition for Sport and Performance	151.333 Adult Nutrition and Positive Ageing
	194.350 Human Lifecycle Physiology	194.346 Control of Metabolism
	234.323 Exercise Physiology II	194.342 Cell Physiology
		234.327 Investigating Sports Performance
		234.361 Exercise Psychology

Courses that are required for the major in Exercise and Sport Science

Courses required for the minor in Physiology

Courses required for both majors

NUTRITION AND PSYCHOLOGY

Human Nutrition involves the study of interactions between nutrients and the human body. You will also learn about the factors that influence food choice and practices that promote dietary change. Gain further insights into human thought and behaviour by also taking the major in Psychology which is the study of the human brain and why we behave in the ways that we do.

CAREERS

Registered nutritionist, public health, policy adviser, health promotion, consultancy and private practice, food companies and the food industry, medical nutritional companies, research in universities and research institutes. The first-year of this study also leads to majors and minors in:

- Genetics (page 27)
- Human Nutrition (page 28)
- Physiology (page 36)
- Psychology (page 38)

RECOMMENDED BACKGROUND

14 credits in NCEA level 3 chemistry, 14 credits in NCEA level 3 biology.

CONTACT

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NUTRITION AND PSYCHOLOGY – RECOMMENDED STUDY

BSC MAJORS: HUMAN NUTRITION AND PSYCHOLOGY

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.130 Introductory Biostatistics
	123.101 Chemistry and Living Systems	194.101 Essentials of Mammalian Biology
	162.101 Biology of Cells	122.102 Biochemistry of Cells
	175.101 Psychology as a Social Science	175.102 Psychology as a Natural Science
	Semester One	**Semester Two**
YEAR TWO	151.231 Food Chemistry for Nutrition	151.232 Nutrition and Metabolism
	194.241 Physiological Control Systems	122.233 Metabolic Biochemistry
	175.203 Introduction to Psychological Research	175.201 Social Psychology
	175.205 Brain and Behaviour or 175.206 Memory and Cognition	175.210 Nga Tirohanga Rua o te Taha
	Semester One	**Semester Two**
YEAR THREE	151.331 Maternal and Child Nutrition	151.333 Adult Nutrition and Positive Ageing
	151.332 Nutrition for Sport and Performance	151.334 Nutrition Communication and Promotion
	175.302 Abnormal and Therapeutic	175.306 Individual Differences
	175.303 The Practice of Psychological Research or 175.343 Personnel Psychology and Career Development	175.345 Organisational Psychology

Courses that are required for the major in Human Nutrition

Courses required for the minor in Psychology

Courses required for both majors

LOGISTICS, IT AND MANAGEMENT

The major in Logistics and Supply Chain Management will give you the knowledge you need to help firms improve productivity. Massey offers a selection of highly relevant courses taught in block mode, in conjunction with the graduate diploma that is attended by working professionals. Your career will often require a broad understanding of the entire firm and you can improve your knowledge in this area by including minors in Business Management and Information Technology. Or you can select other minors from across the Sciences or from other Colleges such as Business.

CAREERS

Work for domestic manufacturing companies, local government bodies and large domestic corporations. International firms specialising in logistics and supply chain management also look to Massey University for new employees. The first-year of this study also leads to majors and minors in:

- Computer Science (page 20)
- Data Science (page 21)
- Mathematics (page 32)
- Statistics (page 39)
- Information Technology (BInfSc) (page 42)
- Information Systems (BInfSc) (page 42)
- Software Engineering (BInfSc) (page 42)

CONTACT

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LOGISTICS, IT AND MANAGEMENT

MAJOR: LOGISTICS AND SUPPLY CHAIN MANAGEMENT
MINOR: MANAGEMENT AND INFORMATION TECHNOLOGY

	Semester One	Semester Two
YEAR ONE	247.155 Communication in the Sciences	161.120 Introductory Statistics
	158.100 Computer Apps and the Information Age	159.102 Computer Science Fundamentals
	159.101 Programming Fundamentals	115.103 Legal and Social Environment
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	Semester One	**Semester Two**
YEAR TWO	240.260 Logistics and Supply Chain Fundamentals (block course)	240.262 Transportation Systems (block course)
	240.261 Logistics Management (a) (block course)	240.261 Logistics Management (b) (block course)
	158.244 System Management and Testing	158.235 Networks, Security and Privacy
	152.252 Project Management	152.261 International Business
	Semester One	**Semester Two**
YEAR THREE	240.363 Supply Chain Management (a) (block course)	240.362 Industry Trends and Applications (block course)
	240.363 Supply Chain Management (b) (block course)	240.365 Distribution Strategy (block course)
	158.337 Database Development	158.345 Social and Professional Issues in IT
	152.350 Strategic Management	152.304 Managing Services

Courses that are required for the major in Logistics and Supply Chain Management

Courses required for the minor in Information Technology

Courses required for the minor in Management

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

BIOLOGICAL SCIENCES

A major of the BSc

A GOOD FIT IF YOU

- Enjoy the study of animals, plants, and microsystems
- Are fascinated by looking at life processes at a molecular level
- Are interested in finding out more about the natural world
- Are an innovative and patient problem-solver

From genes to entire ecosystems, the study of biological sciences covers the whole spectrum of life. You'll gain an understanding of a broad range of life science

. This includes the molecules organisms are built from, the form and function of molecules, the conservation of plant and animal species and ultimately the management of ecosystems.

LEARN FROM THE EXPERTS

When you study the Bachelor of Science (Biological Sciences) at Massey, you'll learn first-hand from our world-renowned biological sciences staff. They are cell biologists, geneticists, microbiologists, zoologists and ecologists, researching many areas of biology. These include applied sciences in agriculture and animal science, to the latest theories about the origins of life and the processes of molecular evolution. This means a major in biological science at Massey will give you an in-depth and comprehensive understanding of a large number of biological disciplines – and beyond. That is a great advantage when you are looking for a job.

HAVE AN IMPACT ON THE WORLD

Biological sciences has an impact on all sorts of areas of global significance, such as

- Human health
- Unravelling the human genome
- Novel pharmaceutical products derived from plants and animals
- Biodiversity
- The conservation of endangered species
- Finding out who is related to whom in the natural world (with spin-offs to forensic science)
- Managing the ecosystem services that supply us with fresh water, clean air, and fertile soil

CATERS TO DIVERSE INTERESTS

You can choose from our extensive range of disciplines to combine all your varied interests in ecology, zoology, environmental science, marine ecology, microbiology and more into one overarching major.

Some of the topics to be taught in biological sciences include:

- Ecology and conservation
- Applied ecology and resource management
- Flora and fauna of New Zealand
- Biochemistry
- Human genetics
- Behavioural ecology
- Biodiversity
- Biology and genetics of micro-organisms
- DNA technology
- Ecology and conservation
- Genes and genome analysis
- Marine biology
- Metabolic biochemistry
- Plant biology
- Research methods in biological sciences
- Zoology

CAREERS

Your biological sciences major will help you find a career in a wide variety of situations and industries. Employers such as regional and district councils are always looking for people with a broad-based degree with a specialisation, with environmental science and ecology being two good examples.

Processing industries associated with primary production (such as dairy companies) employ similarly broad-based graduates with a specialisation in the molecular aspects of biological science. Crown Research Institutes and universities also seek out programme graduates at the technical level. In both areas, if you continue to postgraduate study you could move on to a career as a professional scientist. A biological sciences major is also very appropriate for a career as a secondary teacher.

KIRSTY MANN Bachelor of Science (Biological Sciences)
Genetic counsellor – Royal Melbourne Hospital

I've always had an interest in biological sciences, so I chose to study a Bachelor of Science at Massey University Auckland, specialising in molecular biology. During my second year, I came across the genetic counselling profession and knew straight away this was the career I wanted to pursue. Genetic counsellors combine their knowledge of human genetics with the interpersonal and counselling skills required to explore how a genetic condition impacts on the life of an individual and the family unit.

Upon graduating in Australia with a Masters of Science majoring in Genetic Counselling, I was qualified to be employed as a genetic counsellor, and was thrilled to be offered a role at the Royal Melbourne Hospital. In the adult hospital setting, I am predominantly meeting with people with an increased chance of developing an adult onset genetic condition. In a nutshell, this involves providing genetic information to patients that is relevant to their situation and discussing how their genetic condition can best be managed. This process often involves interpreting genetic testing and it relies on my understanding of the intricacies of molecular genetics. I could not do this without the foundational knowledge that I acquired during my learning at Massey.

...I COULD NOT DO THIS WITHOUT THE FOUNDATIONAL KNOWLEDGE THAT I ACQUIRED DURING MY LEARNING AT MASSEY.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

CHEMISTRY
A major of the BSc

A GOOD FIT IF YOU
- Enjoy the study of sciences, especially chemistry
- Have a curiosity for the properties of different substances and how we can improve them

GAIN A SOUGHT-AFTER QUALIFICATION
A chemistry degree offers excellent marketability now and well into the future. One of the exciting things about chemistry is that you begin to understand the world we live in, what everything is made of, and how their properties can be changed. This could help you get involved in huge scientific breakthroughs, and contribute to public debates on issues of global importance.
For example Teflon, a plastic, can be used to line a frying pan while Gladwrap film, also plastic, will melt if you so much as put it near heat. How are the two plastics composed to allow them to have quite different properties and uses?
The Massey University BSc (Chemistry) major provides a full foundation in all aspects of chemistry.

COMBINE WITH OTHER SOUGHT-AFTER SUBJECTS
Match your degree with a second major or minor (eg computer science, mathematics, physics, nutrition, or genetics) to develop a unique blend of skills that will set you apart from the rest.

REAL-WORLD PROBLEM SOLVING
You'll carry out analytical projects applying broad-based chemistry knowledge to solve real-world problems. You'll have the opportunity to work alongside some of our world-recognised researchers on issues of international significance.

GET CONNECTED
You'll be well placed to gain connections and experience within industry while studying. Opportunities include summer internships with Crown Research Institutes monthly functions with New Zealand Institute of Chemistry members and employment opportunities with our chemistry department.

UP CLOSE AND PERSONAL WITH EQUIPMENT
You'll interact frequently with a range of instruments and learn techniques for molecular analysis, x-ray crystallography, nuclear magnetic resonance, spectroscopy, ultra-high performance liquid chromatography, and more.
Upon graduating from Massey's chemistry programme, you will have a much greater understanding of environmental issues such as climate change. You will be able to contribute intelligently to public debates on controversies such as chemicals in the environment.
Your degree will give you excellent marketability in all industries and businesses that rely on chemistry in many different ways.

CAREERS
As a chemistry graduate from Massey you will be in demand – both in New Zealand and overseas. Your knowledge can be applied to an amazingly wide range of settings including industry, business, research institutes, universities, polytechnics, and schools.
There is a growing role for chemical scientists as we confront major challenges. Chemical scientists, using the principles of green chemistry, will be required to help protect the environment, improve health, provide new energy sources, design new processes, and assist in food production.
Over 200 companies in New Zealand employ chemical scientists in product development, quality assurance, marketing, sales, and administration. If you would like to have a career in industry you should consider combining management or occupational health and safety courses with your chemistry major.
You could be employed in the:
- Food industry (dairy, meat, canning)
- Forest products (pulp and paper)
- Chemical processing of wool, textiles, and plastics
- Production of agricultural and horticultural chemicals and pharmaceuticals

Chemical scientists are increasingly employed in areas concerned with the environment; those looking for such a career should include the environmental science package in their programme or consider the Bachelor of Business/Bachelor of Science conjoint programme.
Scientific research is also an important field that you could join. Chemical scientists carry out research in industry, specialist research institutes such as the Fonterra Research Centre and the Forest Research Institute, and at universities.

ANUSHREE SEN GUPTA BSc (Chemistry), Graduated in 2011

In 2013 I graduated with an MSc in Forensic Science at King's College London. At the same time, I interned at Cellmark Forensic Services – the United Kingdom's leading provider of forensic science services.

A degree in chemistry from Massey University is held in high esteem internationally and it ensured that I was a competitive applicant for this exclusive and prestigious course at King's College.

During my time studying chemistry at Massey I enjoyed the broad range of topics and the emphasis on real world applications. The rigorous practical classes fed my passion for chemistry and turned me into a real hands-on scientist.

The teaching and laboratory facilities at Massey are first class and that makes the learning even more enjoyable.

I also gained a wealth of knowledge beyond the classroom from my lecturers who were always approachable and willing to help. My degree opened up myriad opportunities for me including summer research projects at Massey which resulted in the publication of my first scientific paper. The BSc in Chemistry has given me a solid footing in academia and the scientific industry.

I moved back to New Zealand in 2014 and today I am in a senior technical position at AsureQuality in Wellington.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
AVAILABLE VIA DISTANCE LEARNING
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

COMPUTER SCIENCE

A major of the BSc

A GOOD FIT IF YOU

- Think logically and analytically
- Would like to develop new software applications
- Are comfortable with rules and structures
- Enjoy breaking down a complex problem down into its constituent parts
- Like having everything sorted out with nothing left to chance
- Are interested in areas like graphics, simulations, artificial intelligence and programming

Would you like to develop the next computing revolution? Learn how to create computer programs? Find out more about the latest software and hardware development? Have a career doing what you love? Your computer science degree at Massey will help you turn your love of computing into a brilliant career. Massey's Bachelor of Science (Computer Science) will give you the skills to become a sought-after ICT professional, able to take on the best of the thousands of jobs that are available.

A CAREER WITH VARIETY

You already know that computers are part of every aspect of our society, from the stock market to modelling climate change to the apps and games we use daily. It's a varied area that is constantly growing and changing – those exciting changes are being developed by people like you!

WHAT YOU WILL LEARN

During your study of computer science you will learn about all aspects of computer programming and computer systems, from the theoretical foundations to the very practical aspects of developing the latest software applications. No prior programming skills are required.
The Bachelor of Sciences (Computer Science) degree will give you the knowledge and skills to write software for fields such as artificial intelligence, graphics, web-based systems, networks and operating systems. You'll learn about traditional and trending topics including:

- Artificial intelligence
- Data structures and algorithms
- Object-oriented programming
- Computer graphics and image processing
- Mobile applications
- Logic circuits and low-level programming
- Concurrent programming
- A range of programming languages
- Data communications, networks and web applications
- Computer modelling and simulation

NICOLE WILCOX Bachelor of Science (Computer Science)
Graduated in 2016.
Coming from Rangitoto College to Massey University, I chose to study a Bachelor of Science majoring in Computer Science because I felt that it would provide me with really good job prospects. I also wanted to enjoy what I studied and the variety of courses in the BSc meant I could choose what I was interested in.
I was accepted into all of the universities that I applied for but the big draw card for Massey initially was the atmosphere and the halls of residence which are the only five-star hostels in NZ. However, the main factor was the small class sizes and the fact that Massey offered more hands-on opportunities than other universities.
Overall, my study experience was great. My lecturers were very skilled and extremely helpful. I found they had a deep understanding of the topics they were teaching and were very passionate. The intimacy of the classes is invaluable and you get to know your lecturers by name, as do they with their students – something you don't get in many universities.
My degree taught me the foundations of programming and how to be able to pick up any language/area efficiently. I find graduates from other universities have been taught a wide range of different skills/languages but have only skimmed over them and do not have an understanding of the fundamental principles behind programming. I find as a Massey graduate I am able to pick up things a lot faster than students from other universities.

KEY FACTS
AVAILABLE AT AUCKLAND
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS

DATA SCIENCE
A major of the BSc

A GOOD FIT IF YOU

- Want to be on the cutting-edge of technological discoveries and the 'big data' movement
- Think logically and analytically
- Like uncovering hidden patterns, trends and associations in the world

JOIN THE DATA REVOLUTION

Become a high-tech specialist and join this fast-paced, growing industry. Massey University's Bachelor of Science (Data Science) will teach you how to make sense of complexities so others can easily understand them. You will learn how to apply computing to data-oriented challenges. You may have an interest in commerce, government, natural and social sciences, or you may want to learn how to apply technology to drive innovation, decision-making and research in those fields. You may want to learn how to use programming to solve potentially world-changing issues.

A FOUNDATION IN SCIENCE

You will be able to take advantage of Massey's expertise across a broad range of sciences disciplines. If you are interested in natural and fundamental sciences, you can choose to complete a double major/minor combination including chemistry, biology, genetics or physics. These are also areas where computational and data processing skills are becoming increasingly important.
Similarly, you may choose data science with a minor from any of the offerings under business, health, creative arts or humanities and social sciences. If you have a curious mind, are fascinated by data, and enjoy the thrill of making discoveries and want to join a rapidly growing industry this qualification is for you.

A BRAND NEW JOB

Data scientist is one of the newest job descriptions in the Information and Communication Technology (ICT) sector. This degree will give you a solid background in the sciences, with a focus on this growing industry.
You will learn how to solve real-world problems using data, in combination with cutting-edge computing technologies and analytical methods.
We are in the midst of a data deluge.
Whether it is in the commercial world, social media, internet, sciences, healthcare or government, every sector is inundated with data. 'Big Data' is the hot topic in almost every industry. Hidden within all these data is knowledge and everyone has woken up to the reality that they need it to stay ahead. The industry is actively trying to recruit the professionals to fill this skills shortage.

CAREERS

According to market research, it is estimated there will be a shortage of 1,200 data scientists in New Zealand by 2017.
Tertiary education providers around the world cannot produce data scientists quickly enough to satisfy the demand. A shortage of 190,000 data scientists is expected in the United States alone over the next five years.
The average paying salary for a data scientist in the United States is $90,000 and over $100,000 for those with working experience.
The skills you learn at Massey University and the qualification you will receive are recognised throughout the world and enable you to work in any industry or government sector.
Some examples of careers that could lead on from this qualification include:

- Data science engineer
- Business analytics consultant
- Data-product entrepreneur
- Banking fraud detection analyst
- Machine learning specialist
- Government researcher
- Government communications and security analyst
- Customer insight analyst
- Data management architect
- Text mining analyst
- Software developer
- Scientific researcher

■ **NIGEL PARKER**, Director, Developer Experience, Microsoft NZ
"One of the four megatrends that will shape our industry over the next decade is big data. Data is the new currency and being able to draw insight from data and predict outcomes will be the new business advantage. I am excited to see that Massey is introducing a degree in Data Science and am encouraged to see how quickly they are responding to transformation in our industry."

■ **GEOFF BEYNON**, Executive General Manager, SAS Institute (NZ) Ltd
"SAS strongly supports the proposal by Massey University to add a major and minor in data science to their academic qualifications as part of the BInfSc degree program. These courses will contribute directly not only to creating a robust and cohesive program of study for NZ graduates, but they will also make a lasting impact on the looming analytical skills shortage we face globally."

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
SOME COURSES AVAILABLE VIA DISTANCE LEARNING
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

ECOLOGY
A major of the BSc

A GOOD FIT IF YOU
- Enjoy sciences, especially biology
- Would like to work outdoors with animals or plants
- Enjoy analysing data and solving problems

In the Bachelor of Science (Ecology) at Massey you'll learn how to make sense of the natural world, how plants, animals and microbes interact with one another and their environment, how complex ecological systems function and how we can repair them when damaged.

WHAT IS IT LIKE?
From molecules to forests, ecology is a broad discipline that teaches you how to make sense of the interactions between organisms and their environment. We now have a great deal of information about the natural world available to us; the problem is how to make sense of that information. Ecology attempts to do this.
The Bachelor of Science (Ecology) at Massey offers some of the best courses on ecology in New Zealand – making it the number one choice if you want a broad knowledge in the discipline.

WORLD-LEADING ACADEMICS
Learn about the latest research findings from the cutting-edge research lead by our ecology staff. Examples include Dr Mike Joy and his research on river water quality and Professor Diane Brunton and her discoveries on bellbird song dialects.
Our ecology staff are world-leading and their cutting edge research feature heavily in the teaching – so you can expect to learn about the latest research findings in lectures.

HANDS-ON EXPERIENCE
Practical labs and field trips are an important part of all the ecology courses. You might learn how to identify fish and invertebrates for monitoring water quality, how to build a computer model to predict the recovery of an endangered species or set a sustainable quota for a fishery, or how to survey biodiversity in a forest or the ocean.
During your studies you could work as a volunteer for the Department of Conservation recording native bird populations and helping with recovery programmes, gain a summer internship with one of New Zealand's crown research institutes or work alongside a Massey researcher. This experience will put you a step ahead when finding a job. It will also give you a taste for what your future job may be like.

EXPERIENCED
Our ecology programme has been running for more than 20 years – the longest running programme of its kind in New Zealand. It is supported by years of experience, and continually developed to remain relevant in today's environment.

WHAT WILL I LEARN?
Some of the courses taught in the ecology major include:
- Flora and fauna of New Zealand
- Ecology and conservation
- Biological evolution
- Limnology
- Applied ecology
- Resource management
- Plant ecology
- Community and ecosystem ecology
- Biodiversity
- Entomology
- Behavioural ecology

SCHOLARSHIPS
New Zealand's science institutions want employees who know their industry and therefore invest in the future workforce by providing scholarships to students. Why not have a crack at helping fund your study with a share of hundreds of thousands of dollars on offer every year? For more information visit **awards.massey.ac.nz**

CAREERS
Many of our graduates work with the Department of Conservation or the Ministry for the Environment. There are great opportunities for graduates in ecology to work with researchers in the area of managed ecosystems. The interactions between scientists interested in managed and natural ecosystems is a focus at Massey University. Many of our graduates go on to positions with central and local government or their agencies (such as regional and district councils), Crown Research Institutes, environmental or conservation organisations, school teaching, or technical and advisory work. A postgraduate qualification in ecology will allow you to approach many environmental research and management issues from a strong theoretical and practical base.
You might work in:
- An interdisciplinary team in a private environmental consulting firm or a government laboratory
- Working with a regional council investigating the nature of freshwater ecosystems
- Forestry
- Fisheries
- Education

KATHARINE MORRIS Bachelor of Science (Ecology)
Biodiversity Ranger, Department of Conservation

As a conservation worker, I wanted to gain a qualification in the field to back up my knowledge and develop a strong holistic grounding in how ecosystems work.

I chose to complete my BSc (Ecology) at Massey University because of their distance offering. I completed my degree over eight years fitting study in between full-time work and nights out in the bush. It was tricky and required a lot of determination, but I managed and got there in the end.

In my role as a Biodiversity Ranger for DOC I work mostly with kiwi. It's pretty neat! Part of my job involves monitoring predators out in the bush, trapping and controlling them and doing small mammal indexing. The other part of my role includes management and husbandry of kiwi chicks. It's a bit of messy job cleaning up after them, but it's well worth it. I monitor their weight, their faeces, their blood and how they're eating. Once the chicks have been artificially hatched at the West Coast Wildlife Centre, they come to us where we look after them so they get used to the weather and outdoors. From there they go to a crèche island, which we monitor to keep it predator free. The kiwis then go back out into the bush where the hope is that they will populate.

My work contributes to the BNZ Operation Nest Egg project. The project is all about increasing the population of breeding birds so they start breeding. The work we do increase these chances from 5% to at least 65%. It's incredibly rewarding work.

What I have learnt through my studies has complemented what I've learnt out in the field. It has given me a strong grounding, especially for when I want to conduct research. Ecology has taught me about how everything in the environment works together and given me great tools to use when monitoring different species.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
AVAILABLE VIA DISTANCE LEARNING
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

ENVIRONMENTAL SCIENCE

A major of the BSc

A GOOD FIT IF YOU

- Have a passion for the environment
- Enjoy sciences, especially biology
- Have an interest in geography
- Want to try to solve environmental problems

TURN YOUR INTEREST IN THE ENVIRONMENT INTO A CAREER

Studying environmental science at Massey will give you the tools and understanding needed to help create a sustainable path for New Zealand and the world.

WHAT IS IT LIKE?

Join one of New Zealand's leading universities in the study of environmental impacts. You will be taught by experts in this field and will be able to take advantage of Massey's expertise and teaching programme in many different areas related to this field, for example agricultural production.

MAKING THE CONNECTION

Environmental science focuses on the connections between humans and their natural environments.
Managing and mitigating human impacts on the environment is crucial for New Zealand, and much of the world. Our reputation depends on us becoming truly clean and green despite the increased pressure on the environment.

IMPROVE OUR PLANET

The Bachelor of Science (Environmental Science) will see you become involved in Massey's aims to develop a sustainable path for the future by solving real-world issues such as managing natural resources and environmental impacts. Through lab work and field trips to water treatment plants and a range of managed and mismanaged environments across the North Island, you'll explore processes and investigate interactions between pollutants, soils, water quality and more. From there you can help to address issues in the food sector, by combining environmental science with a major in agriculture, horticulture, geography or soil science.
To take your studies overseas, you can progress on into our postgraduate programme in environmental management. Students in this programme carry out research all over the world offering their knowledge in global contexts. For example, a current international project involves students who are examining environments at complex borders between countries in Africa.

TAUGHT BY THE EXPERTS

Our researchers and teachers have an excellent reputation. They are widely published in peer-reviewed international scientific journals and are often asked for their expert knowledge. You will be taught by experts in physical geography, soil biology, chemistry, freshwater management, ecological economics, environmental technology, and in sociology. Integrating these diverse fields is what an environmental scientist does – we'll show you how!

WHAT WILL I LEARN?

Some of the topics taught in environmental science courses include:

- New Zealand environmental issues
- Global environmental issues
- Ecology and conservation
- Environmental science field work

CAREERS

There are many paths open to graduates with a BSc in Environmental Science who want to turn their interest in the environment into a career. Potential employers both in New Zealand and overseas include Central Government, Regional, District and City Councils, private sector consultants, and entrepreneurs. You may also find employment in one of these areas.

- Environmental planning and policy
- Coastal management
- Landscape management
- Soil and water
- Agriculture and forestry
- Geographic information systems
- Tourism and recreation
- Development
- National parks
- Renewable energy
- Biodiversity management

A pass with good grades can lead to postgraduate studies, then to a career in research or tertiary teaching.

MILLY FARQUHAR Bachelor of Science (Environmental Science)
Land Management Officer – BOP Regional Council

I have always loved the outdoors and this degree allowed me to see some really amazing places. I found it challenging at times but it really helped that I was studying something I love.

I'm working as a land management officer at Bay of Plenty Regional Council. My degree prepared me with many of the fundamental skills to carry out the role while also giving me a good base line of technical knowledge.

I spend half my days in the field and the other half in the office. Fieldwork includes providing assistance and advice on sustainable land uses such as a biodiversity protection and riparian management. In the office I draft reports, use GIS mapping software, and do small amounts of financial reporting and reconciliations amongst other things.

Environmental Science is a field that will continue to grow, now and in the future, as the state of our environment continues to decline we are going to need more and more people managing and researching our natural resources.

ENVIRONMENTAL SCIENCE IS A FIELD THAT WILL CONTINUE TO GROW, NOW AND IN THE FUTURE...

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

EXERCISE AND SPORT SCIENCE

A major of the BSc

A GOOD FIT IF YOU

- Have a passion for sport, exercise and health
- Are fascinated by how the body moves, particularly during sport
- Want to learn more about how exercise influences health

GET SCIENTIFIC AND PRACTICAL SKILLS

The Exercise and Sport Science major is ideal for you if you want a broad knowledge base in sport, coupled with practical, applied skills that will make you a sought-after employee in the health and fitness world.

WHAT IS IT LIKE?

With the Exercise and Sport Science major, you'll study a broad range of subjects relating to sport and exercise like biomechanics, exercise physiology and training science. Together, this foundation helps you understand how to enhance sport performance and improve health.
Conduct your own sport performance investigation from finding the topic right through to selecting subjects, collecting data, analysing results, reporting and presenting. Students have done projects such as examining how caffeine affects performance, the connection between hydration and attention, and how things like heat and dietary interventions affect performance.
You will learn theoretical material in lectures, and apply your new-found knowledge in laboratory or practical classes in a range of subjects relating to sport and exercise. You will develop critical thinking, problem-solving and communication skills relevant to this energy-fuelled and constantly progressing field. The main applications are sports performance, and the use of exercise to promote fitness and health.
You can combine exercise and sport science with other sport programmes such as sport management and coaching, exercise prescription and training, or science programmes such as physiology and human nutrition.

CAREERS

Massey's exercise and sports science graduates have an excellent reputation throughout the sporting industry and are sought after in a wide range of areas including teaching, coaching, sports, fitness and health.
Some examples are:

- Sport scientist working with individual athletes, sports teams, sports coaches and regional sporting bodies
- Providing exercise and health guidelines for clients and patients in fitness centres, medical centres, clinics and hospitals
- Providing occupational health advice to companies and local bodies
- Teaching at secondary and tertiary level

■ **JEMMA O'DONNELL** Nutritionist at Sanitarium

As a regional soccer player I thought my nutrition and training schedule was as good as it could be – but it wasn't until I received a lecture in sports nutrition that I realised I could be performing better. This lecture spurred my interest in sports nutrition and now I'm a nutritionist at Sanitarium. The best part about studying at Massey was the flexibility. I finished my Bachelor of Science double majoring in Sport and Exercise Science and Human Nutrition in 2009. I then went on to complete my Masters in Science majoring in Human Nutrition.
I had a really great experience at Massey, both in Palmerston North and Auckland. Massey really looks after their students in every capacity.
As a nutritionist at Sanitarium, my job involves helping customers with product nutritional information and offering general nutrition advice.
A large part of my job is also managing the website content, making sure the website is being regularly updated with new content, and that subscribers are sent regular emails about what is going on. I also get to work on various community projects that Sanitarium runs, and write articles for a number of different magazines and columns.
Massey's programme – throughout undergraduate and postgraduate studies – has definitely provided me with the skill set I need to do this job well. Not only did Massey give me the technical and scientific knowledge, but it also taught me invaluable skills around critical thinking, researching, and the ability to continually learn as information changes.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

GENETICS
A major of the BSc

A GOOD FIT IF YOU
> Are interested in the natural world
> Are interested in where our genes come from, how they work, affect who we are and how we think
> Want to learn about the biological revolution that is changing the face of medicine, agriculture and environmental science

WHAT IS IT LIKE?
Become part of the spectacular advances being made in medicine, agriculture and environmental science through modern genetic analysis and next generation technologies.
Genetics is a hugely-relevant area of study to the world today and a discipline that unifies many others.
The Bachelor of Science (Genetics) will teach you how genetics helps us understand the big questions of life: Where did we come from? How are we and our world changing and adapting? How can we create better medicine, create more efficient agriculture and protect ourselves and our environment from disease and destruction?
The explosion of information concerning the dynamic nature of our world comes from so called 'next generation DNA sequencing technologies' that are helping us to answer big questions of our time. These discoveries are changing our understanding of the world around us, and what we know about who we are as humans. Today, sequencing the genome of organisms is a basic activity behind much scientific research.

A FAST-PACED, EXCITING FIELD OF SCIENCE
Genes have helped unlock the secrets of our past, present and future. Ten years ago we would sequence one piece of DNA or RNA at a time – and this was how the human genome was deciphered. Today scientists can sequence millions of pieces of DNA simultaneously.

THE PAST
> Genetic testing of skeletal remains in the South island tells us some of the earliest New Zealand pioneers were from many different families.
> DNA analyses identified the body of King Richard III (more than 500 years after his death) under a car park in England.
> Analyses of DNA provide the cornerstone for our understanding of the living world: what the nature of flora and fauna is and where different species have come from.

THE PRESENT
> Genetic research is helping us understand why certain diseases are prevalent and why genetic mutations can be 'good' in some situations and 'bad' in others. For example, It is a genetic mutation that enables many adults to consume dairy products (lactase persistence). This mutation is thought to have spread through human populations with the rise of dairy farming.
> Another gene 'defect' is one that helps prevent HIV infection and AIDs progression. The mutation evolved much earlier than the origins of AIDs. The hunt is on to discover the cause.

THE FUTURE
> Accompanying climate change is the emergence of new pathogens that affect water quality, our agricultural systems and the health of our forests and alpine herb fields. Researchers at Massey are investigating the genetics of pathogens and the biological systems they invade. We hope to understand both the emergence of novel pathogens and the resilience of our natural and farmed ecosystems.

CAREERS
Graduates in genetics from Massey University hold a wide range of positions both in New Zealand and overseas, such as:
> Biotechnology industries
> Laboratory research positions
> Molecular diagnostics
> Scientific sales
> Plant and animal breeding
> Government regulatory agencies
> Teaching
> Biological information technology
> Producer boards
> Scientific journalism

MEGAN SKIFFINGTON (NEE LAING) Genetics Graduate
A Bachelor of Science degree, majoring in Genetics plus Physiological and Molecular Plant Biology, has opened many doors and accelerated my career. After being lucky enough to work in a leading fungal genetics laboratory and a plant molecular biology unit in two different institutes during my studies, I decided to go towards the business side of science, as opposed to research.
I now manage key accounts for a leader in the scientific supplies field. I deal with people at all levels of the scientific profession, and am able to relate to the goals they are trying to achieve because of my background in science from Massey. My studies gave me a broad scientific knowledge-base to work on, as well as research and communication skills that have proven invaluable in my position. My job is different every day – it gives me independence and keeps me interested.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

HUMAN NUTRITION
A major of the BSc

A GOOD FIT IF YOU
- Enjoy working with people
- Have a passion for nutrition
- Are fascinated by the relationships between food, nutrients, health and disease
- Are curious about what makes your body tick

TURN YOUR PASSION INTO YOUR PROFESSION WITH NUTRITION AT MASSEY
If you are passionate about food and nutrition and want to learn more about the science of how what you eat affects health, then Massey's BSc (Human Nutrition) is for you.

WHAT IS IT LIKE?
Nutrition has become one of the key issues facing society. Knowledge about human nutrition and the application of this knowledge are essential elements in maintaining a healthy society.
Human nutrition is a progressive, multi-disciplinary science requiring knowledge ranging from nutrient supply and metabolic processing by the body to psychosocial and behavioural factors influencing diet. The human nutrition major is designed to give you a clear understanding of basic nutritional principles.
Areas covered in your Bachelor of Science (Human Nutrition) include the composition of food, human requirements for nutrients, and how the body processes food and nutrients.
The programme also highlights the physiological changes that occur as a result of excesses or deficiencies of various nutrients in the diet, as well as the changes in nutritional needs from conception through birth, growth, adulthood, and ageing. You'll gain an understanding of factors that influence food choice and awareness of practices to promote dietary change.

TOPICS
Some of the topics taught in human nutrition courses include:
- Food chemistry
- Nutrition and metabolism
- Maternal, child and adolescent nutrition
- Food choice
- Adult nutrition
- Human lifecycle physiology
- Sport/performance nutrition

You'll gain an integrated understanding of nutrition, biochemistry and physiology all related to the human body.

This will give you the basis of knowledge required for enhancing health and fitness in individuals of all ages, and in groups and communities. The major will provide training in practical skills such as dietary assessment and body composition assessment and general skills required for critical thinking, problem-solving, and effective communication. With this knowledge you'll be able to work at promoting good nutritional practices to individuals, communities and industry. In addition to the professional skills you'll gain, the programme provides an excellent general education in how diet contributes to optimal personal health and well-being.
Massey University in Auckland and Palmerston North are the only places in the North Island where you can study a specialised human nutrition major.

FIRST-CLASS FACILITIES; TOP LECTURERS
Benefit from a range of first-class facilities for study and research, including the only two Bod Pods in New Zealand and dual energy x-ray absorptiometry (DXA) equipment for measuring bone density and body composition. Your lecturers are highly qualified and have specialist research interests ranging from public health nutrition and nutrition through the lifecycle to cellular mechanisms and nutrient metabolism.

CHOOSE WHEN, WHERE AND WHAT YOU STUDY
You can choose from full-time or part-time study and even take some first-year courses by distance learning, so you can combine your studies with work and other commitments. Nutrition courses can also be taken as electives or for personal interest.

LOADS OF FLEXIBILITY
The human nutrition major can be taken as a double major by combining with other disciplines such as exercise and sport science, biochemistry, physiology or other biosciences so you have loads of choice. You can also take a minor in another subject to broaden your expertise. In your first year, you'll take courses common to all these disciplines so you maintain a lot of flexibility. In your third year, courses for the major in human nutrition are highly specialised, but you'll still be able to explore advanced study in other relevant areas.

FUTURE PATHWAYS
Take your degree into a number of organisations or progress to more specialised areas in the Master of Science, including our limited-entry Nutrition and Dietetics programme in Auckland.

CAREERS

Qualified human nutritionists contribute to the economic viability of New Zealand as a food producing and exporting nation – they are essential in maintaining the health of our society at minimum cost. Human nutritionists can work with organisations such as Crown Research Institutes, in the dairy industry, and many other food-related companies. Graduates will also play increasingly important roles in the public health sector as the move towards health promotion continues. There is a wide range of career opportunities for human nutrition graduates, including:

- Health promotion/public health agencies (eg District Health Boards, Ministry of Health, NZ Heart Foundation)
- Sports and exercise nutrition (eg elite and recreational sports teams, fitness industry)
- Research in universities and Crown Research Institutes (such as AgResearch, Plant and Food Research)
- Secondary and tertiary educational institutions
- Consultancy and private practice
- Food companies and food industry
- Government adviser on policy, education, nutrition and physical activity
- Industry (eg corporate health and wellness, private consulting)
- Media (eg writing publications, television, marketing)
- Medical nutritional companies (eg nutrition adviser, nutritional representative)
- International relief work

Our graduates have internationally marketable skills. Many spend time outside New Zealand, working or furthering their studies.
After five years in a nutrition-related occupation, graduates can apply to the Nutrition Society of New Zealand for professional accreditation as a Registered Nutritionist. If successful, you can append the title RegNut(NZ) after your name.
Many students go on to complete a postgraduate qualification, such as the Postgraduate Diploma in Science (Human Nutrition) or a Master of Science in either Human Nutrition or Nutrition and Dietetics. This allows you to specialise for various working environments.
Students who continue their studies to the MSc in Nutrition & Dietetics, are eligible to apply to be registered with the New Zealand Dietetics Board to practise as a dietitian in New Zealand (NZRD), and will become eligible to apply for registration in both Australia and the United Kingdom.
Dieticians can be found working in hospitals or health clinics providing meal plans and nutrition counselling, and also in food services within hospitals, prisons and hostels.

■ **CARMEL TRUBUHOVICH** Bachelor of Science (Human Nutrition and Physiology), Nutritionist, New Zealand Nutrition Foundation
I have always been very passionate about food and how it is essential for good health. I wanted to find a way to turn my passion into something that can benefit others, so I decided to study Human Nutrition and Physiology. I found the programme challenging, but all that hard work makes the reward of graduating even better.
One of the most important skills I learned during my studies was critical evaluation – essential in the public health and nutrition industry as there is a huge amount of misinformation being published every day and a large part of what we all do here at the Nutrition Foundation is to provide the public with information based on scientific research.
I really enjoyed studying at Massey. The Auckland campus is such a nice campus with great facilities. It's easy to get to and you have to love the free parking! I really liked the smaller classes – lecturers get to know you. It makes it easier to ask for support if you need it.
My suggestion to future students is to work hard and do as much volunteer work as you can before you graduate so you can gain some confidence and make great industry contacts.
Also, subscribe to any relevant blogs, newsletters and websites so that you keep up-to-date on the latest industry happenings as it changes fast!

KEY FACTS

AVAILABLE AT AUCKLAND IN BLOCK MODE
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

A major of the BSc

A GOOD FIT IF YOU

- Think systematically and analytically
- Enjoy working in a team
- Thrive in a changing environment
- Have a global outlook
- Are working in the industry and wish to increase your skills and knowledge in logistics

JOIN A UNIQUE QUALIFICATION

Massey University is the only place where you can study logistics and supply chain management as part of a science degree. You'll learn how the management of supply chain relationships and optimisation of global logistics are crucial to business success.

WHAT IS IT LIKE?

As international business transactions have increased, the logistics of moving materials and products between nations have become more complicated. Logistics is all about coordinating flows from where products are made, through to the end consumer. It's an exciting area, constantly growing and changing, with new technologies enabling improved efficiencies.

HELP MAXIMISE SATISFACTION AND PROFITS

The BSc (Logistics and Supply Chain Management) will give you the knowledge of logistics and supply chain management you need to be able to help firms improve productivity. The flow-on effect is an increase in the country's prosperity – helping wider society as well. You will learn how to help firms work together to maximise customer satisfaction.

RELEVANT LEARNING

Our logistics and supply chain programme offers a choice of highly-relevant courses. All logistics and supply chain management courses are taught in conjunction with the part-time graduate diploma that is attended by working professionals. During three-day block courses, you will share a learning environment with practitioners and develop practical skills and an awareness of the industry through discussions of real life cases.

SOUGHT-AFTER SKILLS

Employers consistently seek graduates who are 'left-brain' thinkers with strengths in logical order, sequencing and numbers, so broad scientific knowledge is an added value in their eyes.

WHAT WILL YOU LEARN?

You will learn how to improve your reflective, evaluative approach to problems, to improve your critical evaluation, and come up with innovative solutions. You will learn how to construct logical arguments based on sound reasoning to solve organisational problems and apply best practice techniques to commercial problems. You will gain knowledge in the most recent theories and methodologies and learn how to apply these in the working world.

CAREERS

Graduates may be employed by domestic manufacturing companies, local government bodies, and large domestic corporations. In addition, international firms specialising in logistics and supply chain management often look to Massey University for new employees.
As supply chain professionals, most graduates will be working in a fast-paced commercial environment focused on delivering high levels of customer service. Supply chain professionals are responsible for developing collaborative relationships with other firms and are therefore often required to travel overseas. The role typically requires a broad understanding of the entire firm and interaction with a range of colleagues. This means the supply chain profession is seen by many as a fast track to executive management.

KEY FACTS
AVAILABLE AT AUCKLAND
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

MARINE ECOLOGY
A major of the BSc

A GOOD FIT IF YOU
> Are interested in the sea and the species that live there
> Enjoy the sciences
> Want to understand and learn how to manage the environmental pressures on the marine environment

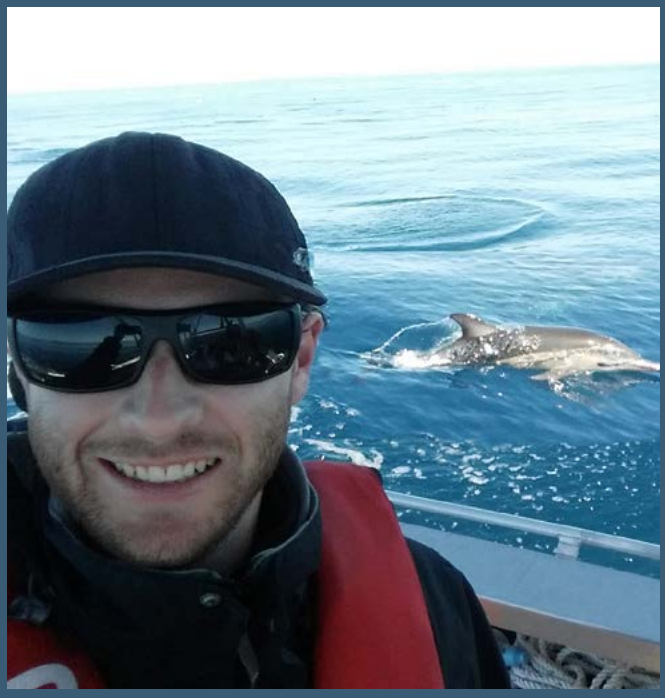
WHAT IS IT LIKE?
More than 70% of the Earth's surface is covered by seawater – this marine environment plays a crucial role in supporting life on our planet. It is diverse, complex and a valued natural resource.

WAITING FOR YOUR DISCOVERIES
The Bachelor of Science (Marine Ecology) will teach you about the principles and processes underpinning marine ecology, the vastness of life in the seas and coasts. You'll learn that much of the marine environment remains undiscovered.

BE SOUGHT-AFTER
Imagine monitoring whale movements and their impact on fish species or providing consultancy on sustainable practices for construction near waterways. As a marine ecologist your unique skills and knowledge will be in huge demand and lead to a range of jobs working independently, or for agencies like DOC, NIWA and the Ministry for Primary Industries.

EXCITING STUDY AREAS
Learn about majestic creatures of the underwater world, gain skills for estimating dolphin populations, or investigate an area of marine ecology that interests you through our courses; Quantitative Statistics, Marine Mammalogy and Topics in Marine Ecology.

THE PRACTICAL SKILLS YOU'LL NEED
Massey's marine ecology programme will introduce you to the biological principles and processes that are basic to all forms of life in the sea. You will learn about the ecology of marine organisms; how they interact with one another, with their environment, and the land. You will gain a solid grounding in marine ecology history and theory.
Studying at Massey will also give you practical skills in field biology and data analysis, and support you in formulating and answering complex questions about the marine environment.



■ **BLAIR OUTHWAITE** BSc (Marine Ecology) Graduated 2015
Returning from fishing near Whangarei one day, I spotted a large pod of dolphins and a mother/calf pair of whales. It was then I knew I wanted to dedicate my life to working with whales and dolphins. Massey appeared to have a good ecological department and the courses looked hands-on. As I did not graduate from high school and was enrolling as an adult student, I felt Massey provided me with the best opportunity and support for my situation. I got a solid foundation that allowed me to get to the next level of study. For almost two years during my undergraduate study I volunteered for a PhD student who was researching the common dolphins in the Hauraki Gulf. This gave me skills I could apply in the field and in the lab and eventually led to my postgraduate opportunity at Massey. For my master's, I am looking to identify differences in behaviour between areas of high and low levels of tourism using behavioural and acoustic recordings. I am also assessing the usefulness of citizen science in cetacean research and identifying the occurrence of bottlenose dolphins around the North Shore and Whangaparaoa coast.

KEY FACTS

AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
AVAILABLE VIA DISTANCE LEARNING*
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ OR VIA DISTANCE LEARNING

*Subject to planning advice

MATHEMATICS

A major of the BSc

A GOOD FIT IF YOU

- Think logically and analytically
- Are a problem solver
- Enjoy mathematics at school

A GROWING DEMAND FOR YOUR SKILLS

Mathematics will give you the skills to join a wide variety of industries.

WHAT IS IT LIKE?

From securing sensitive communications using cryptography, to calculating the geostationary orbit of a satellite, mathematics is a product of human ingenuity that allows our modern world to exist. It is fundamental to our lives.

LEARN FROM THE LEADERS

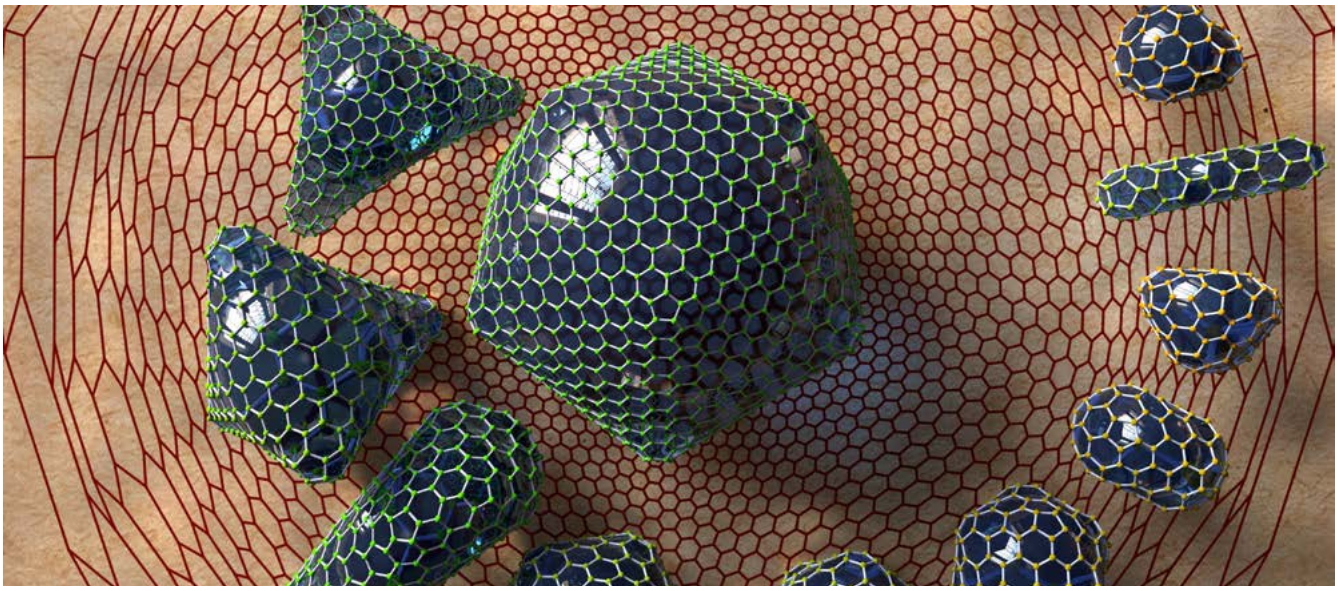
You will have access to some of the world's top mathematical minds. You will graduate well-grounded in the basic mathematical principles, but you'll also be stimulated by your exposure to the latest research and discoveries. Our mathematics programme is taught by leading researchers encompassing the modelling of geothermal processes, cell growth, dynamical systems, scientific computing, combinatorics, topology, epidemiology, celestial mechanics, neuroscience, industrial mathematics, number theory, geometry and analysis. This versatility demonstrates the variety of job areas available to mathematically-skilled scientists.

REAL-WORLD SKILLS

Our strength in applied mathematics means you'll get to combine your learning with other science disciplines to gain extensive experience in a range of applications. You'll use your knowledge to solve problems in the areas like computer programming, climate modelling, and transportation.

THE SKILLS YOU'LL NEED

The task of the mathematician is to find ways to collect appropriate data for analysis and problem-solving.
Mathematics draws much of its following and strength from its ability to solve problems in a wide variety of areas, such as the sciences, engineering, commerce and industry. These are all areas of expertise at Massey. As part of your study you will learn the ability to communicate and explain concepts effectively with non-mathematical colleagues. This is also a crucial skill, with many careers taking you into a team environment.



The BSc (Mathematics) will help you build up a wide variety of skills and techniques you will need to be part of projects like these, especially in calculus and algebra.
You need to be able to formulate, solve, restate, resolve problems and interpret results. Most students achieve a mix of application courses and courses that explore mathematics.
It is also increasingly important to complement your analytical skills with some knowledge of computational and simulation techniques on computers. We suggest supporting minor subjects including physics, computer science, finance or statistics.

TOPICS

Some of the topics taught in mathematics courses include:

- Differential equations
- Analysis
- Algebra
- Combinatorics
- Mathematical modelling
- History of mathematics
- Discrete mathematics

CAREERS

Mathematicians work in a wide range of professional careers including food, finance, manufacturing, and technology.
Mathematicians work in industry for manufacturers, insurance companies, finance companies (Wall Street hires mathematicians), banks, market research companies, and as public and private consultants.
Most government departments recruit graduates of mathematics at the bachelor level for general staff, or at honours level for their research sections. Large industries and Crown Research Institutes recruit mathematics graduates with a special interest in applications. The increasing demand for research in the mathematical sciences provides an opportunity for those who enjoy mathematics at an advanced level.
Many mathematicians with advanced degrees seek university teaching positions, but there are also many other exciting and fulfilling positions available with an undergraduate degree in mathematics.
New Zealand organisations which have hired mathematicians in recent years include:

- AgResearch
- New Zealand Treasury
- New Zealand Defence Forces
- Mobil Oil Ltd
- New Zealand Post
- Westpac
- 3M
- PWC
- MetService

■ **JAY TA'ALA** Bachelor of Science (Mathematics)
Grade Simulation Specialist – BHP Billiton
BHP Billiton mines and ships iron ore around the globe. Their products are defined by the percentages of iron, and other impurities.
'Don't be fooled by the chemical elements,' says Jay, 'my role is 99% maths!'
In his work, Jay develops simulation models to forecast, quantify, and inform his company on chemical analyte levels (Fe, P, SiO_2, Al_2O_3, etc) in their shipping products.
The simulation models he develops are generally characterised by two things: complex system dynamics (they're made up of many sub-systems that can operate autonomously, but the system as a whole is interdependent) and being highly stochastic (eg analyte levels of ore as it's being mined isn't constant, they need to be represented by random distributions).
Understanding and quantifying these characteristics requires mathematical techniques (mathematical modelling, numerical methods, and statistics from a numerical experimentation point of view).
'I work alongside chemists and metallurgists but mathematics is what really brings all these disciplines together to allow the business to understand and quantify the system-wide impacts of the decisions they make.'
Jay's first job after university was working for the New Zealand Defence Force in Wellington, developing simulations to help predict future operational requirements and any deficiencies that would likely occur in their trade and rank structures. He then moved to Australia and did some work for the Vice Chief of Defence Force Preparedness Group, again in military simulations. Later he moved to the mining industry with BHP Billiton in Perth.
'What's surprising is that although the military and mining industries are vastly different, many of the mathematical modelling and simulation approaches needed to solve business problems are the same.'

KEY FACTS
MINOR AVAILABLE AT AUCKLAND
MAJOR AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

PHYSICS

A minor of the BSc

A GOOD FIT IF YOU

> Enjoy mathematics and physics
> Are interested in the physical universe
> Have an analytical mind

WHAT IS IT LIKE?

UNDERSTAND THE WORLD AND HOW IT WORKS

Physicists try to understand our physical environment with the smallest set of ideas that will provide that understanding.
There is a continuing evolution of physics theory, based on tried and tested ideas from more than 400 years of continuous development. To understand today's interesting and challenging ideas, you must first understand yesterday's great ideas. The Bachelor of Science (Physics) will enable you to do that with a mixture of theoretical and practical study. You will also be able to focus on either experimental physics or theoretical physics.
The ideas of physics and their interactions are most naturally expressed in mathematical form. Studying physics also requires that you study mathematics, and many students complete a double major in mathematics and physics. Physics also has many applications throughout the other sciences, such as chemistry and biology.

A STRENGTH IN BIOPHYSICS

Massey University's strength and reputation across the life sciences feeds into our physics major. We consider DNA as a physical object and examine how cells apply force and movement to DNA. You'll get to use NMR imaging (MRI), optical tweezers and use laser beams to extract single strands of DNA. You'll solve biological problems from a mechanical point of view. We also have strengths in mathematics and particle physics for those interested in more traditional physics studies.

TOPICS

Some topics taught in physics courses include:
> Special relativity and cosmology
> Quantum physics
> Statistical Physics
> Biophysics
> Classical mechanics
> Electromagnetism
> Thermal physics
> Advanced experimental physics

SCHOLARSHIPS

New Zealand's science institutions want employees who know their industry and therefore invest in the future workforce by providing scholarships to students. See awards.massey.ac.nz for more.

CAREERS

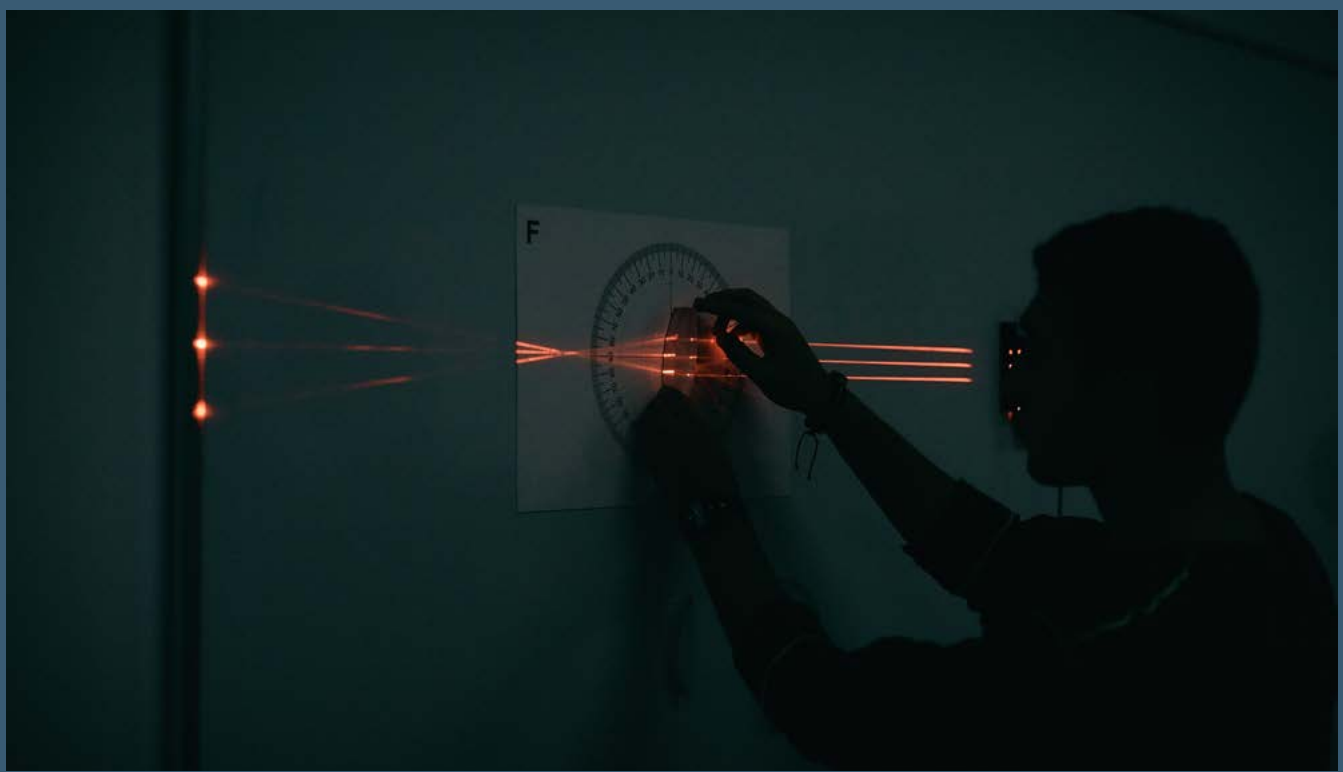
People who major in physics have a driven curiosity about the world around them and how it works and this is an attribute highly valued by employers. The skills you will get during your study for a physics degree are in high demand: analytical ability, numeracy, computational skills and an ability to write organised, coherent reports.
As a physics graduate you can find employment in a wide range of occupations, not all of them directly using physics knowledge. One Massey University physics graduate is CEO of a major infrastructure company. Another runs a chemical company. Many have built excellent careers based on their computational skills. Others find their knowledge of modern electronics helpful. In the world of physics, your Bachelor of Science qualification will enable you to seek employment at research technician level in the Crown and other Research Institutes, MetService, hospital laboratories and in industry. You could explore a career as an officer in New Zealand's defence forces. There are Massey University physics graduates working in all of these areas.

■ **MARK HUNTER** Bachelor of Science (Physics)
Research Scientist – Magritek

I decided to study physics at Massey University after being involved with the Physics Olympiad event run by Professor Tony Signal. He took a team of high school students over to Canberra and through my involvement with that experience I decided to stay on and leave school early to begin my physics degree.

My study experience was both enjoyable and challenging. I had great interactions with my lecturers and was supported at every step of the process. I particularly appreciated the availability of my lecturers during the practical lab work, as they were always close by to provide assistance when I needed it.

Since graduating with my bachelor's degree, I moved on to complete a master's at Massey followed by a PhD at Victoria University. My study prepared me well for my next physics venture, which involved starting up Magritek, a joint venture between Massey and Victoria. The company sells nuclear magnetic instruments to chemistry and physics lab, as well as oil and gas companies. I now work there as a research scientist where I use the skills learnt in my degree and PhD on a daily basis.



KEY FACTS

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AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

PHYSIOLOGY

A major of the BSc

Want to know what makes you tick? Physiology is a rapidly advancing and exciting subject area. Just how important is physiology? It's the only biological science for which you can win a Nobel Prize!

WHAT IS IT LIKE?

Physiology explains how normal cells, tissues and organisms function. It provides the foundation on which we build our knowledge about life, so we can recognise problems and develop new treatments. Early on, you'll get a broad understanding of the functions and integration of the major organ systems of the body. Later courses let you delve into specific topics for in-depth learning.

WHY MASSEY?

LEADING IN WHOLE ANIMAL PHYSIOLOGY

If you're interested in working with animals, we have leading experts across a range of animal-based science disciplines, including animal science, zoology and veterinary science. You'll get to work closely with animals and complete courses such as Comparative Physiology, which emphasise how animals and their bodies function and interact with their environment and the challenges in their environment.

RESEARCH-LED

Ever wondered how water changes affect fish stress levels or how climate change impacts a penguin's survival abilities? Our academics are at the forefront of research like this and use it in their teaching, so what you learn is relevant and engaging. As a student you'll also have the opportunity to tap into these types of research projects and gain experience for future employment.

STUDY WHAT YOU WANT

If you're keen on human health, you can delve into cellular physiology and also take on a second major in an area such as biochemistry or human nutrition. Alternatively, if you're keen on animals you can focus on whole animal physiology and pair this with a second major in zoology or ecology.

■ **SHARON HENARE** BSc(Physiology), Master of Science, PhD
Research Officer, The Riddet Institute
I have always been interested in how things work, particularly living systems. Physiology was a natural fit because it is so diverse. The programme was both challenging and exciting – a good mix of animal and human physiology.
My research career began in reproductive physiology investigating how hormones influence reproduction in birds. Now I work in gastrointestinal physiology investigating how food structures affect digestion in the gut.
As far as jobs go, physiology occupies a central position among the biological sciences so the skills you develop can be easily applied to other disciplines. Majoring in physiology gives you a good solid basis for a career in the biomedical fields.
Today I work in research at the Riddet Institute, examining the relationship between food science and nutrition. My advice to students? Be open to all the opportunities that come your way, even if at first you don't see the connections to the skills you have developed during your studies. The connections will be there and will open doors you may never have considered before.

CAREER OPPORTUNITIES

Physiology is key if you want to work in human or animal health sciences. Can you picture yourself conducting vital research in universities, Crown Research Institutes or pharmaceutical or biotech companies? If you really want to go far, you could even be a research physiologist in outer space, discovering how the body adapts to micro-gravity.
What about working in one of the world's growth industries – healthcare? You can specialise in nutrition, toxicology, pharmacy, radiography, physiotherapy, nursing, or public and environmental health. How about teaching in schools or hospitals? Or you may fancy a career in the medical, veterinary or food industries, a job in medical writing, or in the active world of sport science, exercise and recreation.

FUTURE STUDY

Some of the topics taught include:
> Applied physiology and animal welfare
> Comparative physiology
> Control of metabolism
> Human lifecycle physiology
> Nerves and the nervous system
> Physiological strategies for survival
> Physiology of mammalian organ systems

KEY FACTS

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*Subject to planning advice

PSYCHOLOGY

A major of the BSc

Psychology covers a broad range of topics, but at its simplest level it is the systematic study of individual behaviour. It considers emotions, personality, and the way individuals interact. It also considers learning, memory, thinking and the brain.

Psychology is a growing and ever-changing subject which helps us make sense of the human impact on the world in which we live.

You'll learn how people perceive, learn, think, develop, behave, and relate to one another. Courses will teach you how the structure of the brain affects our behaviour, what makes people different from one another and how being in groups affects people's behaviour. Finally, you'll learn how factors like culture, gender, poverty, and mental illness affect our health, our thinking, and our behaviour.

MARKET LEADING IN NEW ZEALAND

We graduate more clinical psychologists than any other university in New Zealand. Our research and teaching is unique and recognised nationally and internationally. This strength and expertise means your learning will be relevant to today's jobs and societies and your degree will have a great reputation.

APPLIED LEARNING

During your degree you can take part in our broad selection of courses across areas including forensic, experimental and community psychology that demonstrate how foundational skills can be applied.

CAREERS

A degree in psychology may lead to many possible career paths. Virtually any setting where knowledge of human behaviour and interactions is useful may employ someone with knowledge of psychology. Some areas in which recent graduates have gained employment are:

- Human resource management
- Rehabilitation psychology
- Business psychology
- Teaching
- Scientific research
- Public health
- Counselling
- Defence psychology
- Special education

After completing a BSc, postgraduate study may allow you to practice as a registered psychologist in clinical or organisational settings.

FUTURE STUDY TOPICS

Some of the topics taught in psychology courses include:

- Abnormal and therapeutic psychology
- Bicultural perspectives in psychology
- Brain and behaviour
- Community psychology
- Evolution, learning and culture
- Memory and cognition
- Organisational psychology
- Social psychology

KEY FACTS

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STATISTICS

A major of the BSc

A GOOD FIT IF YOU

- Want to create quantitative solutions to modern day problems
- Enjoy teamwork with people from different subject areas
- Are confident working with computers

WHAT IS IT LIKE?

We live in an information-rich age. Vast quantities of data are collected on almost every conceivable subject. We use statistical methods to make sense of this raw data, turning it into knowledge. Statistics is the science of evidence. It allows us to quantify risk and make effective decisions even when we are uncertain about the world around us. Is this new treatment effective against breast cancer? What adverts should my website display in order to increase my revenue? How can I better interpret that weak distress signal coming from a vessel far out at sea?

SOUGHT-AFTER SKILLS

If you enjoy working with numbers, you will love studying statistics. It is a broad area of study, that involves much more than the organisation and display of data. Careful analysis of underlying questions and critical examination of the sources of data are part of the art of statistics. Modelling the variability in data to calculate the reliability of answers is part of its science.

LEADING IN DATA MINING

Massey's statistics programmes are ranked as some of the best globally. Out of 800 of the world's leading universities we were ranked in the top 200 in the QS World University Rankings. In an information age, 'big data' plays a crucial role in helping businesses to maximise the sale and reputation of their products and services. Being able to work with large data sets to discover patterns and draw useful conclusions is a sought-after skill for many employers, and an area of expertise at Massey.

A GLOBAL IMPACT

Your Bachelor of Science (Statistics) lecturers are experts in their field, leading international statistical research, with practical applications for worldwide issues. One of our lecturers has developed methods and software that scientists around the world use to monitor and analyse marine and land-based communities.
During the UK foot and mouth epidemic in 2001 epidemic data was analysed to improve the efficiency of disease control with the results fed into government policy. Another of our statistics professors is developing statistical models of poverty and malnutrition in third-world countries. His work is being used by the World Bank to more effectively distribute food where it is needed.

THEORY AND PRACTICAL RELEVANCE

As a Massey statistics student you will learn the key theories of statistics, and the quantitative skills to conduct robust statistical analyses that are effective in the real world. You have the option of completing a double major or minor in a wide range of subjects, such as marine ecology and genetics.

COMPLEMENTARY SKILLS THAT SET YOU APART

If you are studying other science subjects or looking at studying business, studying statistics as a complementary subject is a great idea. The extra quantitative skills that you get from the statistics qualification can set you apart from other graduates when applying for jobs.

FUTURE STUDY TOPICS

Some of the topics taught in statistics courses include:

- Probability models
- Data analysis
- Statistical models
- Statistical inference
- Biostatistics
- Experiments and surveys
- Multivariate models
- Statistical methods of quality improvement
- Data mining
- Simulation
- Forecasting and time series

CAREERS

Statistics is set to become an increasingly important discipline over the next 20 years. With a major in statistics you can expect to be highly sought after in the workplace and will rarely have trouble finding a job. Recent graduates have found employment in a remarkably wide variety of areas including:

- Scientific research
- Health services
- Environmental management
- Commerce (particularly finance and marketing)
- Social sciences
- Quality improvement
- Industry
- Teaching

Employers include government agencies like Statistics New Zealand, Crown Research Institutes, schools, hospitals and medical research institutes, and private companies both large and small. Opportunities for statisticians exist worldwide.

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY
AVAILABLE FOR INTERNATIONAL STUDENTS STUDYING IN NZ

ZOOLOGY
A major of the BSc

A GOOD FIT IF YOU
> Are passionate about the natural world
> Have a passion for animals
> Want to understand and know everything about animals

WHAT IS IT LIKE?
Massey zoology graduates are in high demand throughout New Zealand. Zoology is the animal science of the natural world. It examines animals on a variety of scales from biological knowledge at the molecular level to animals as components of systems; looks at both vertebrate and invertebrate and their impact on New Zealand plants and animals; and includes the study of animal behaviour.

THE LATEST THINKING
You'll learn about land-based animals and environments. You will also develop a strong foundation including the latest thinking in genetic and physiological processes, animal development, anatomy and behaviour. You'll explore freshwater and marine systems, and our wide range of speciality fields including conservation of biodiversity.

WHAT WILL YOU STUDY?
A zoology major offers you a wide range of specialisations in interest areas, as well as in mainstream zoology. The core zoology qualification looks at animals on a variety of scales. You will gain a strong foundation in zoology and the latest thinking in genetic and physiological processes, animal development, anatomy and behaviour. You will gain skills in a broad range of related sciences including ecology, conservation diversity and evolution. It is not just about land-based animals and environments, you will also explore freshwater and marine systems.

IN HIGH DEMAND
From mapping animal migrations to driving conservational change in foreign countries, Massey's zoology graduates are in high demand all over the world working in places like Samoa, South Africa, the Netherlands and United States. You'll graduate ready to join them and take the best of your knowledge to the rest of the world.

WORLD-LEADING LECTURERS
At Massey, our lecturers are passionate about what they do. They have examined bird migration pathways from New Zealand to Alaska and the USA. They have investigated species interactions in the alpine and unlocked knowledge about morphology through examining fossils and lineages in rocks. They bring this knowledge and love for what they do into their teaching to help you uncover what truly inspires you.

AN EXCITING AND PRACTICAL SUBJECT
The most exciting advances in biological knowledge are probably at the molecular level, which we cover in the second year. Also at the

level of animals as components of systems, which we cover in the third year.
A key speciality in your study will be the fascinating and practical field of conservation of biodiversity. This looks at both vertebrates (birds, predators) and invertebrates and at their impact on New Zealand indigenous plants and animals. Another interesting area is the study of animal behaviour. This speciality also has an applied side.

CAREERS

From mapping trans-hemispheric animal migrations to driving conservational change in foreign countries, Massey's zoology graduates are in high demand all over the world working in places like Samoa, South Africa, the Netherlands and United States. You'll graduate ready to join them and take the best of your knowledge to the rest of the world.
Massey Bachelor of Science (Zoology) graduates are employed widely. You could contribute your skills to central and regional government organisations, conservation groups, teaching, private consultancy firms, or through the media (for instance making television documentaries). Places of work include:

> Department of Conservation
> Regional councils
> Crown Research Institutes
> Ministry of Primary Industries
> Biosecurity in New Zealand
> Ministry for the Environment
> Environmental Risk Management Authority
> Fish & Game New Zealand
> SCION (formerly Forest Research Institute)
> Private environmental consultancy firms
> Private conservation initiatives
> School teachers
> News media including magazines, newspapers, websites, radio, television and documentary making

■ **CIARAN CAMPBELL** Bachelor of Science (Zoology)
Freshwater Ranger – Department of Conservation
After graduating with a Bachelor of Science, majoring in ecology and zoology, the Department of Conservation offered me a position as a Freshwater Ranger.
I am currently working on the conservation of threatened and endangered freshwater fish in Otago, Southland and Canterbury, restoring whitebait fisheries in the Clutha River and monitoring the growth of didymo.
I would not be able to do this without having a fundamental understanding of the ecological science behind conservation, acquired during my tertiary studies at Massey.

BACHELOR OF INFORMATION SCIENCES
BInfSc

Institute of IT Professionals NEW ZEALAND

ICT graduates are in demand in New Zealand and around the world. The Bachelor of Information Sciences will prepare you for a career in ICT and provides flexibility for your future career path. We recommend a general first year of study that enables you to experience various ICT topics and provides you with a range of second year study options. Find out where you fit into the ICT spectrum and, if you want to, you can change your major at the start of your second year.

RECOMMENDED BACKGROUND
16 credits in NCEA Level 2 mathematics.

DEGREE, MAJOR AND MINOR OPTIONS
- Computer Science
- Data Science
- Information Systems
- Information Technology
- Software Engineering

GREAT STUDY CHOICES
- Informatics for Business Analysis
- Software Development

FIRST YEAR BINFSC
INFORMATION SCIENCES STUDY RECOMMENDATION

	Semester One	Semester Two
YEAR ONE	158.120 Fundamentals of Info Technology	158.100 Computer Apps and the Information Age
	159.101 Programming Fundamentals	159.102 Computer Science Fundamentals
	160.132 Concepts in Mathematics	247.177 Written Communication for Info Sciences
	161.101 Statistics for Business	An elective

* Electives may include: 124.129 Astronomy; 115.109 Intro to Business Data Analysis; 160.133 Processes in Mathematics; 159.103 Games Programming (available during Summer School only)

INFORMATICS FOR BUSINESS ANALYSIS

Individuals and organisations increasingly rely on the digital processing of information. The study of informatics encompasses both the design and construction of IT systems, and the ways that people use and interact with them to process information. Informatics therefore covers both the technical aspects of computing and its wider role in the lives of people and organisations.
This degree offers a broad understanding of Information Technology with applications in Marketing and Business Analysis. Alternative minor options are possible

CAREERS

Business analyst, systems analyst, software testing, e-business consultant. The first year of this study also leads to Bachelor of Information Sciences majors and minors in:

- Information Systems
- Information Technology
- Software Engineering
- Any minor in Business (take the first-year courses required by the minor as electives).

CONTACT

Associate Professor Chris Scogings: **C.Scogings@massey.ac.nz**

INFORMATICS FOR BUSINESS ANALYSIS – RECOMMENDED STUDY

BINFSC MAJOR: INFORMATION TECHNOLOGY. MINORS: INFORMATION SYSTEMS AND MARKETING

	Semester One	Semester Two
YEAR ONE	158.120 Fundamentals of Information Technology	158.100 Computer Apps and the Information Age
	159.101 Programming Fundamentals	247.177 Written Communication for Info Sciences
	157.150 Management Information Systems	115.109 Introduction to Business Data Analysis
	161.101 Statistics for Business	115.113 or 115.114 or 115.115 or elective
	Semester One	**Semester Two**
YEAR TWO	158.212 Application Software Development	158.225 Systems Analysis and Modelling
	158.244 System Management and Testing	158.235 Networks, Security and Privacy
	157.240 Social Media Networks for Business	157.241 Information Systems and e-Commerce
	156.200 Marketing for non-Marketers	156.233 Marketing Research
	Semester One	**Semester Two**
YEAR THREE	158.337 Database Development	158.326 Software Architecture
	158.359 User Experience Design	158.345 Social and Professional Issues
	157.340 Organisational Knowledge	156.340 Customer Intelligence
	158.383 Information Technology Project	157.341 Strategic Management or elective

Courses that are required for the major in Information Technology

Courses required for the minor in Information Systems

Courses required for the minor in Marketing

SOFTWARE DEVELOPMENT

This is the perfect degree for a career in professional software development. The broad foundation at the first-year leads to a choice of specializations including graphical programming (for games programmers), systems analysis (for complex business applications) and concurrent programming (for cutting-edge computational science). If you choose the individual programming project or the team project you will gain valuable experience in creating a working software application.

CAREERS

Software developer, software architect, systems programmer, analyst programmer, software testing, software maintenance, web development, mobile applications. The first year of this study also leads to majors (or minors) in:

- Computer Science
- Information Systems
- Information Technology
- Software Engineering

CONTACT

Associate Professor Chris Scogings: C.Scogings@massey.ac.nz

SOFTWARE DEVELOPMENT – RECOMMENDED STUDY

BINFSCI MAJOR: COMPUTER SCIENCE. MINOR: INFORMATION TECHNOLOGY

	Semester One	Semester Two
YEAR ONE	158.120 Fundamentals of Information Technology	158.100 Computer Apps and the Information Age
	159.101 Programming Fundamentals	159.102 Computer Science Fundamentals
	160.132 Concepts in Mathematics	247.177 Written Communication for Information Sciences
	161.101 Statistics for Business	124.129 or 115.109 or elective
	Semester One	**Semester Two**
YEAR TWO	159.201 Algorithms and Data Structures	159.202 Declarative Programming
	159.234 Object-oriented Programming	159.235 Graphical Programming
	158.212 Application Software Development	158.225 Systems Analysis and Modelling
	159.233 Computer Architecture (or elective)	158.235 Networks, Security and Privacy or 158.244 or an elective
	Semester One	**Semester Two**
YEAR THREE	159.302 Artificial Intelligence	159.336 Mobile Application Development
	159.334 Computer Networks	159.339 Internet Programming
	158.337 Database Development	158.345 Social and Professional Issues
	247.310 ICT Industry Engagement Project	247.310 ICT Industry Engagement Project

Courses that are required for the major in Computer Science

Courses required for the minor in Information Technology

BIG DATA SOLUTIONS

The ultimate degree for a career as a data analyst with an extra layer of expertise as a computer programmer. Data scientists are in demand and are highly paid. A data scientist who can also develop mobile applications for data analysis and visualisation is well on the way to a challenging and rewarding career in a range of areas from corporate and high finance to scientific research. Mathematics and statistics at the highest school level are important for this subject combination.

CAREERS

Data analyst, business analyst consultant, data-product entrepreneur, fraud detection specialist, communications and security analyst, software developer, mobile application developer. The first year of this programme also leads to majors (or minors) in:

- Computer Science
- Data Science
- Information Technology
- Software Engineering

CONTACT

Associate Professor Chris Scogings: C.Scogings@massey.ac.nz

BIG DATA SOLUTIONS– RECOMMENDED STUDY

BINFSC MAJOR: DATA SCIENCE. MINORS: COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

	Semester One	Semester Two
YEAR ONE	158.120 Fundamentals of Information Technology	158.100 Computer Apps and the Information Age
	159.101 Programming Fundamentals	159.102 Computer Science Fundamentals
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	161.101 Statistics for Business	247.177 Written Communication for Information Sciences
	Semester One	**Semester Two**
YEAR TWO	158.222 Data Wrangling and Machine Learning	161.220 Data Analysis
	159.201 Algorithms and Data Structures	159.202 Declarative Programming
	160.211 Linear Algebra	159.234 Object-Oriented Programming
	158.212 Application Software Development	158.235 Networks, Security and Privacy
	Semester One	**Semester Two**
YEAR THREE	158.337 Database Development	158.333 Applied Machine Learning and Data Visualisation
	159.302 Artificial Intelligence	159.336 Mobile Application Development
	161.324 Data Mining	158.326 Software Architecture
	159.333 Programming Project	158.345 Social and Professional Issues

Courses that are required for the major in Data Science

Courses required for the minor in Computer Science

Courses required for the minor in Information Technology

BACHELOR OF NATURAL SCIENCES

KEY FACTS
AVAILABLE AT AUCKLAND
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY

BNatSc

The world needs scientists who have expertise not just in science, but in putting science into a global context. Join this unique degree to discover the solutions to today's big issues like species extinction, climate change, spiralling population growth and the spread of disease.

WHAT IS IT LIKE?

If you are interested in science subjects such as biology, chemistry and physics, and like to tackle complex problems, the Bachelor of Natural Sciences could be for you. Massey's natural sciences degree provides you with a broad and flexible education across the sciences. Using inquiry-based learning, you will analyse issues such as sustainability from an interdisciplinary perspective.
Opportunities to engage in exciting research projects and electives from subjects beyond the traditional science disciplines means you will be working where scientific thinking meets real-world problems. The degree is unique in New Zealand and is modelled after similar degrees offered at leading international universities. Graduates are ready to join the scientific community of today, and equipped to help solve the global problems of tomorrow.

FAST-TRACK MASTER'S

The Bachelor of Natural Sciences offers a unique fast-track master's degree. If you do well in your first three years you can complete a master's degree in your fourth year.

FLEXIBILITY IN SPECIALISATION

The Bachelor of Natural Sciences offers several prescribed pathways, which allow you to focus on emerging fields such as sustainability and quantitative biology as well as classical fields such as chemistry, physics and biology, from an interdisciplinary perspective. Subjects in your first year include chemistry, physics, biology and mathematics, as well as the first-year BNatSc core courses; Science and Sustainability and Core Skills for Natural Sciences. The rest of your subjects through to graduation are very flexible, depending on your area of interest.

TAUGHT BY INTERNATIONAL EXPERTS

You will join the highest achievers in science to study across the disciplines of biological and physical science. You'll learn from international experts in their field.

$30,000 SCHOLARSHIPS AVAILABLE

The Massey University Albany Vice Chancellor's Natural Sciences Excellence Award offers an annual scholarship of up to $30,000 in total for each of two students who excel in their studies.

MAKE YOUR OWN DISCOVERIES

The degree focuses on inquiry-based learning. That means you will work not only on solutions to problems, but on identifying those problems yourself. First-year study is based on structured inquiry. In Year 2, lecturers provide guidance to stimulate self-directed exploration of questions. Open inquiry is the aim in Year 3, when you will come up with the questions you want to answer and independently research the answers.

CAREER OPPORTUNITIES

More than any other science degree, the Bachelor of Natural Sciences opens the door to careers in diverse fields. Employers are increasingly looking for graduates with a cross-disciplinary background, not only in sciences but across business and social issues.
During the course of your studies there is a strong focus on fostering your research, analysis and discovery skills. This independent-thinking is highly-valued and vital for progressing scientific discovery in New Zealand and around the world.
Your career after you graduate could include working in the following fields:

- Academic research and education
- Applied science and technology
- Sustainability and conservation
- Policy making and regulation
- Business and entrepreneurship
- Counselling and consulting

ENTRY REQUIREMENTS

All students must have a university entrance qualification and require 16 credits each for two of the following NCEA Level 3 subjects:

- Biology
- Chemistry
- Physics
- Mathematics

CHARLOTTE ROBERTSON BNatSc, graduated 2015
Intern, DairyNZ and AgResearch

The best part of this degree was creating my own pathway by selecting the courses that would be most interesting and useful to me rather than following a prescribed course.

I think the most valuable skills the degree teaches are: critical thinking, tackling global issues and self-directed research. Because it exposed me to a variety of topics in science, I can understand and communicate with people from scientific disciplines very different to my own.

Studying at Massey has set me up very well for my future – I was accepted for a 12-month internship at DairyNZ and AgResearch before I finished my undergrad!

This internship is broad and will give me the opportunity to explore the dairy industry from different sectors and gain experience in these different areas. I am very glad I have this opportunity because I will be able to see the dairy industry from different perspectives. I want to continue my studies after this internship and complete a Masters and PhD. My goal is to get a position where I can develop and implement environmentally sustainable farming practices.

TYPICAL PATTERN FOR A BNATSC DEGREE

YEAR 1	*YEAR 2*	*YEAR 3*
Science and Sustainability 15 credits	Systems and Models 30 credits	Research Themes in Nat Sci 30 credits
Core Skills for Natural Scientists 15 credits		
Biology 15 credits	Bacteriophage Discovery and Genomics 15 credits	Research Project 15 credits
Chemistry 15 credits	Project Management or alternative 15 credits	Philosophy of Science 15 credits
Physics 15 credits	Elective – Science 15 credits	Elective – Science 15 credits
Mathematics 15 credits	Elective – Science 15 credits	Elective – Science 15 credits
Elective – Science or beyond 15 credits	Elective – Science or beyond 15 credits	Elective – Science 15 credits
Elective – Science or beyond 15 credits	Elective – Science or beyond 15 credits	Elective – Science or beyond 15 credits
120 credits	120 credits	120 credits

Compulsory | BNatSc Core | Elective

QUANTITATIVE BIOLOGY

A quantitative biology focus in the Bachelor of Natural Science combines core courses with a selection of courses from Biostatistics, Computer Science, Mathematics and Genetics. You will gain broad skills in the Natural Sciences, strong quantitative skills (programming, modelling and statistics), and very good knowledge in modern genetics and genomics. For the Bachelor of Natural Sciences we encourage you to select the courses that suit you! We are happy to advise how best to tailor the degree to suit your interests.

CONTACT

Professor Thomas Pfeiffer: T.Pfeiffer@massey.ac.nz

QUANTITATIVE BIOLOGY – RECOMMENDED STUDY

	Semester One	Semester Two
YEAR ONE	123.101 Chemistry and Living Systems	122.102 Biochemistry of Cells, or elective
	124.111 Physics for Life Sciences	161.130 Introductory Biostatistics
	159.101 Programming Fundamentals	246.101 Science and Sustainability
	162.101 Biology of Cells	246.102 Core skills for Natural Scientists
	Semester One	**Semester Two**
YEAR TWO	246.201 Systems and Models in Natural Sciences	246.201 Systems and Models in Natural Sciences
	160.132 Concepts in Mathematics	160.133 Processes in Mathematics
	161.250 Data Analysis for Biologists	203.212 Principles of Genetics
	An elective	196.217 Evolutionary Biology
	Semester One	**Semester Two**
YEAR THREE	246.302 Research Themes in Natural Sciences	246.302 Research Themes in Natural Sciences
	246.301 Special Topic / Research Project	134.308 Philosophy of Science
	122.231 Genes and Gene Expression	161.331 Biostatistics
	An elective	203.343 Advanced Genetics and Genomics

SUSTAINABILITY

The sustainability focus combines the Bachelor of Natural Sciences core courses with a selection of courses from ecology, chemistry and molecular biology. Graduates will have broad skills in the Natural Sciences, and specific knowledge designed to tackle problems related to environmental issues, conservation and sustainability.
For the Bachelor of Natural Sciences we encourage you to select the courses that suit you! We are happy to advise how best to tailor the degree to suit your interests.

CONTACT

Professor Thomas Pfeiffer: T.Pfeiffer@massey.ac.nz

SUSTAINABILITY – RECOMMENDED STUDY

	Semester One	Semester Two
YEAR ONE	123.101 Chemistry and Living Systems	120.101 Biology of Plants
	124.111 Physics for Life Sciences	161.130 Introductory Biostatistics
	162.101 Biology of Cells	246.101 Science and Sustainability
	199.101 Biology of Animals	246.102 Core skills for Natural Scientists
	Semester One	**Semester Two**
YEAR TWO	246.201 Systems and Models in Natural Sciences	246.201 Systems and Models in Natural Sciences
	160.132 Concepts in Mathematics	120.218 The Flora of New Zealand
	123.206 Environ and Analytical Chemistry	196.217 Evolutionary Biology
	196.205 Ecology and Conservation	196.225 Marine Biology or elective
	Semester One	**Semester Two**
YEAR THREE	246.302 Research Themes in Natural Sciences	246.302 Research Themes in Natural Sciences
	246.301 Special Topic / Research Project	134.308 Philosophy of Science
	122.231 Genes and Gene Expression	196.318 Molecular Ecology
	199.206 The Fauna of New Zealand	An elective

VETERINARY PRE-SELECTION SEMESTER

The first semester of study for the Bachelor of Veterinary Science and Bachelor of Veterinary Technology are pre-selection semesters. You can do both of these on our Auckland campus. We encourage you to visit the Massey University website for more detailed information about the veterinary programmes.

More people apply than there are available places, so not everyone will be selected into the professional phase of the veterinary programmes. If you are selected into the professional phase, you will continue your BVSc or BVetTech study at Massey's Manawatū campus in Palmerston North for the duration of the degree. Auckland pre-selection students have a range of options open to them.

When you enrol in a veterinary pre-selection semester, we ask you to also enrol in another Massey degree for Semester Two study in case you are not selected into the professional phase. Our Auckland students usually enrol in the Bachelor of Science or the Bachelor of Natural Sciences for Semester Two. If you are selected into the professional phase, your enrolment will be changed to the corresponding veterinary courses for Semester Two.

BACHELOR OF VETERINARY SCIENCE (BVSc)

RECOMMENDED BACKGROUND

- 14-20 credits of NCEA Level 3 chemistry, biology and physics
- At least one mathematics subject to NCEA Level 3 (calculus, statistics or modelling)
- NCEA Level 2 English to meet the university admission requirements

NOTE: For 2019 onwards, it is likely that there will be minimum standards for NCEA level science and math introduced for enrolment into the pre-selection phase of the BVSc. These will be confirmed in the 2019 Prospectus. In the event that students have not met these minimum standards, there will be opportunities to achieve these minimum standards through a pathway programme.

PRE-SELECTION COURSES, FIRST SEMESTER AUCKLAND

- 123.101 Chemistry and Living Systems
- 162.101 Biology of Cells
- 199.101 Biology of Animals
- 124.111 Physics for Life Sciences

GREAT STUDY CHOICES

By studying veterinary science at Massey University you will gain the skills and qualification to be registered as a veterinarian. This can lead to a wide range of careers in the veterinary industry.

The pre-selection courses provide an excellent start to many other science programmes if you are not selected for the Bachelor of Veterinary Science. Some examples include:

BACHELOR OF NATURAL SCIENCES

- For more information see the Bachelor of Natural Sciences Sustainability pathway (see page 49)

BACHELOR OF SCIENCE MAJORS AND MINORS

- Biological sciences (page 16)
- Chemistry (page 18)
- Human Nutrition (page 28)
- Marine Ecology (page 31)
- Physiology (page 36)
- Zoology (page 40)

BACHELOR OF FOOD TECH WITH HONOURS (PAGE 58)

BACHELOR OF ENGINEERING WITH HONOURS (PAGE 54)

Major: Chemical and Bioprocess Engineering. You may transfer directly to these programmes in Semester Two if you have a B average for your vet pre-selection courses and 14 credits in NCEA Level 3 mathematics and statistics.

CONTACT

BVSc Advisors James Waaler or Sian Moran: courseadvice@massey.ac.nz

BACHELOR OF VETERINARY TECHNOLOGY (BVetTech)

RECOMMENDED BACKGROUND

- 14 credits of NCEA Level 3 chemistry and biology
- At least one mathematics subject to NCEA Level 3 (calculus, statistics or modelling)
- NCEA Level 2 English to meet the university admission requirements

NOTE: For 2019 onwards, it is likely that there will be minimum standards for NCEA level science and math introduced for enrolment into the pre-selection phase of the BVetTech. These will be confirmed in the 2019 Prospectus. In the event that students have not met these minimum standards, there will be opportunities to achieve these minimum standards through a pathway programme.

PRE-SELECTION COURSES, FIRST SEMESTER AUCKLAND

BACHELOR OF VETERINARY TECHNOLOGY (BVetTech)

- 123.101 Chemistry and Living Systems
- 162.101 Biology of Cells
- 199.101 Biology of Animals
- 247.155 Communication in the Sciences

GREAT STUDY CHOICES

The study of veterinary technology at Massey University will give you broad-based scientific training that can lead to many different, challenging and rewarding careers in fields related to animals. The pre-selection courses provide an excellent start to many other science programmes if you are not selected for the Bachelor of Veterinary Technology. Some examples include:

BACHELOR OF NATURAL SCIENCES

- Sustainability pathway (see page 49)

BACHELOR OF SCIENCE MAJORS AND MINORS

- Biological sciences (page 16)
- Chemistry (page 18)
- Human Nutrition (page 28)
- Marine Ecology (page 31)
- Zoology (page 40)

CONTACT

BVetTech Advisors James Waaler or Sian Moran: courseadvice@massey.ac.nz

BACHELOR OF VETERINA

Contributing to the health and wellbeing of an

ONLY DEGREE OF ITS KIND IN NEW ZEALAND

WHO WE ARE

INTEGRAL MEMBERS OF THE MODERN ANIMAL HEALTH CARE TEAM

WE HAVE BROAD **ANIMAL SCIENCE** KNOWLEDGE

WE ARE **PROBLEM SOLVERS** AND **CRITICAL THINKERS**

WE ARE TRAINED ALONGSIDE VET STUDENTS IN A CLINICAL ENVIRONMENT

TYPES OF ANIMALS WE WORK WITH

COMPANION

AVIAN

WILD EXOTIC

EQUINE

PRODUCTION

WHERE WE FIT

Vet | Vet Technologist | Vet Nurse

Massey University's veterinary school has been ranked first in the world by employers in the Quacquarelli Symonds (QS) ranking.

We also have New Zealand's only veterinary teaching hospital and our faculty are world-renowned.

ARY TECHNOLOGY

himals, people and communities

WHERE WE WORK

NEW ZEALAND
AUSTRALIA
WALES
ENGLAND
IRELAND
SCOTLAND
CANADA*
USA*

*in states that do not require licencing or registration only

TYPES OF ROLES WE HAVE

WILDLIFE TECHNOLOGIST

DENEKA DE SOUSA, *"I assist in the clinical care of wildlife patients which includes anaesthesia, diagnostics, surgical procedures and medication management. I'm also involved in wildlife research projects"*
BVetTech Graduate Massey University 2013

TERRITORY MANAGER, FARM ANIMAL PRODUCTS

JAKE MORRISON *"I call on vet clinics to promote our range of animal health products, educate staff about their benefits, and attend conferences and events to discuss our products. My degree gives me scientific and technical credibility with my clients"* **BVetTech Graduate Massey University 2013**

FARM SOLUTIONS MANAGER

SAM TENNENT *"I advise farmers on how to improve livestock performance and farm productivity. The agriculture papers I completed during my study help me understand what farmers are facing on a daily basis"*
BVetTech Graduate, Massey University 2012

EMERGENCY AND CRITICAL CARE VETERINARY TECHNOLOGIST

KATE LEVERIDGE *"I am an animal paramedic so I deal with the initial triage of emergency patients, as well as stabilisation and assisting with life saving procedures"*
BVetTech Graduate, Massey University 2013

CLINICAL INSTRUCTOR

PATRICE PALLESON-PUTT *"I teach practical clinical skills to vet students such as dentistry, handling, surgery skills, equine and large animal procedures. My broad animal science knowledge proves very useful when training others"*
BVetTech Graduate Massey University 2012

VETERINARY TECHNOLOGIST

PETA ROSSITER *"My job involves a wide range of tasks including weighing, vaccinating and drenching large animals, assisting with treatments of sick animals in the clinic, and completing lab work"*
BVetTech Graduate, Massey University 2012

/masseyuniversity #MasseyUni

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

BACHELOR OF ENGINEERING WITH HONOURS
BE(Hons)

Start becoming an engineer from day one. You'll learn the skills to make you a sought-after employee in New Zealand and internationally.

WHY MASSEY?

YOU ARE GUARANTEED YOUR FIRST CHOICE OF MAJOR

Whether you choose your major at the start or the end of your first year, there are no limits on the places available. There's no chance of missing out – you can study what you're passionate about!

REAL-WORLD PROBLEM SOLVING

Every year you work on projects that can help both our communities and industry, giving you a real feel of what engineering involves, and the skills that distinguish you from the rest.

WANTED BY EMPLOYERS

Our practical learning environment, combined with having more work experience than any other New Zealand engineering graduate, will see you develop the skills that employers are looking for.

SUPPORTIVE LEARNING ENVIRONMENT

To help you transition to university patterns of independent study we provide you with a personal tutor.
A Year Dean coordinates your entire first year experience. Also, you're tutored in small-groups of up to 25 students, so you have easy access to our faculty experts.

MODULAR LEARNING

We teach and assess subjects in small blocks so that you know how you're doing throughout a semester. There are modular tests but no final 'big' exams.

FLEXIBLE STUDY

If you wish to change from the BE(Hons), you may be able to transition into a Bachelor of Information Sciences or Bachelor of Science. The first years of several of these programmes' majors have many courses in common.

WHEN CAN I START?

You can start your study in February.

MAJORS

- Chemical and Bioprocess Engineering
- Electronics and Computer Engineering
- Engineering and Innovation Management
- Mechatronics

CONTACT

Associate Professor Gourab Sen Gupta: G.SenGupta@massey.ac.nz

JEREMY HILL Chief Technology Officer
Fonterra Co-operative Group Ltd
"The Massey graduates we have employed have brought an excellent blend of engineering principles and practical relevance. In other words they hit the ground running and in Fonterra that has taken them far in the company and often far in the world."

CAREERS

Worldwide, engineering is recognised as vital to successful economies and more and more graduates are needed.

CAREER PROGRESSION

- You may find your early employment is in technical development project work or research.
- In five years, you are likely to be a manager in technical, research and development, production, or quality assurance.
- You may become a general manager, or start your own businesses. Our degree includes business so you have what's needed.
- Postgraduate study attracts those wanting to work in research and development.

EARNING POTENTIAL

The 2014 Remuneration Survey of the Institute of Professional Engineers New Zealand reports new graduates start on a median salary of $52,000 and after five years are earning around $75,000. Those further into their careers earn much more.

HELPING YOU LAND THE JOB YOU WANT

Massey engineering graduates are sought-after by employers for their ability to be valuable employees from Day One. Massey provides first-rate support to help you 'hit the ground running' – you'll stand out from the rest.

PRACTICAL EXPERIENCE

During your degree you spend 900 hours (six months, minimum) working as engineers with companies. That's more than any other programme in New Zealand. We want our students have a competitive edge.
Our staff help you find intern or summer work, and work with Massey's Career and Employment Service to ensure you get what you need.

- Dedicated website advertising work opportunities
- Tips on writing CVs
- Job interview guide and mock interviews
- Career planning workshops
- Engineering company staff to put you through your paces
- You will be prepared for the competitive world of finding a job.

CAREER OPPORTUNITIES

Our graduates can work in many industries:

- Food
- Pharmaceutical
- Petrochemical
- Biotech
- Chemical
- IT
- Telecommunications
- Power and energy
- Manufacturing
- Consumer products
- Automotive

Our graduates get jobs around the country and around the world as:

- Process engineers
- Waste-water engineers
- Energy development engineers
- Project managers
- Process automation engineers
- Mechanical product engineers
- Research engineers
- Project planners
- Sales engineers
- Manufacturing engineers
- Commissioning and startup planners
- Robotics engineers
- Embedded software engineers
- Equipment reliability engineers
- Test method validation engineers
- Project managers for automation and controls
- Solidworks machine designers
- Mechanical – estimators
- Mechanical system design and analysis engineers
- Manufacturing managers – machining and assembly
- Machine designers
- Systems test engineers
- Software engineers
- Hardware engineers
- Electronics engineers
- Product developers.

ENTRY REQUIREMENTS

Entry into the Bachelor of Engineering with Honours will be guaranteed to applicants who gain university entrance and the appropriate levels specified in the relevant qualifications listed below:

MAJORS (AVAILABLE AT AUCKLAND AND MANAWATŪ)	NCEA LEVEL 3
> Chemical and Bioprocess Engineering > Engineering and Innovation Management with a minor in: > Chemical and Bioprocess Engineering	> Mathematics (including standards in algebra, differentiation and integration) (16 credits) > Physics (16 credits) > Chemistry (14 credits)
> Electronics and Computer Engineering > Mechatronics > Engineering and Innovation Management with a minor in: > Electronics and Computer Engineering or Mechatronics	> Mathematics (including standards in algebra, differentiation and integration) (16 credits) > Physics (16 credits)
CAMBRIDGE INTERNATIONAL EXAMINATIONS: A LEVEL Mathematics (C Grade) and physics (C Grade) plus (for Chemical and Bioprocess Engineering) chemistry (C Grade)	
INTERNATIONAL BACCALAUREATE: 29 POINTS Mathematics (5 points Higher Level) and Physics (5 points Higher Level) plus (for Chemical and Bioprocess Engineering) Chemistry (5 points Higher Level)	

ALTERNATIVE PATHWAYS TO THE BE(Hons)

Applicants who are currently in Year 13 who have not yet had confirmation of UE status and need to do one or more of the Massey University preparatory courses before NCEA Level 3 results (or equivalent) become available in January, have to apply for discretionary entrance.

I HAVE UNIVERSITY ENTRANCE (UE) BUT NEED MORE PREPARATION IN ONE OR MORE OF THE SUBJECTS TO ENTER BE(HONS)

Certificate in Science and Technology
This one-semester pathway is for students who need extra preparation in mathematics, physics or chemistry. These courses can be taken separately (depending on your background) or as part of the CertSciTech qualification.

Diploma in Science and Technology
This is for students wanting to study a wide range of courses, but keep their options open just in case they change their mind and wish to enter another programme. This two-semester pathway is for students that need extra preparation in mathematics, physics or chemistry. You can also choose subjects from: biology, programming, statistics, food, accounting, marketing, finance, and management.

Summer Compact Courses at Auckland
For students that need extra preparation in mathematics, physics or chemistry, we offer a Certificate of Proficiency. You can take 124.100 Introductory Physics, 160.103 Introductory Mathematics (or 160.132 Concepts In Mathematics), or 123.103 Introductory Chemistry. These courses are an intensive learning experience. Students are advised to only take two introductory subjects. Tuition in each course takes six weeks and attendance is required during January and early February. These courses are also available via Distance Learning. These courses can be put towards another qualification in the BSc, BInfSci and BBus.

I HAVE MET THE ENTRY REQUIREMENTS BUT NEED MORE ENGLISH LANGUAGE SKILLS

Direct Entry English Pathway This one-semester pathway is suitable for students wishing to increase their English language skills.

I NEED MORE ENGLISH LANGUAGE SKILLS AND MORE PREPARATION IN THE SUBJECTS TO ENTER THE BE(HONS)

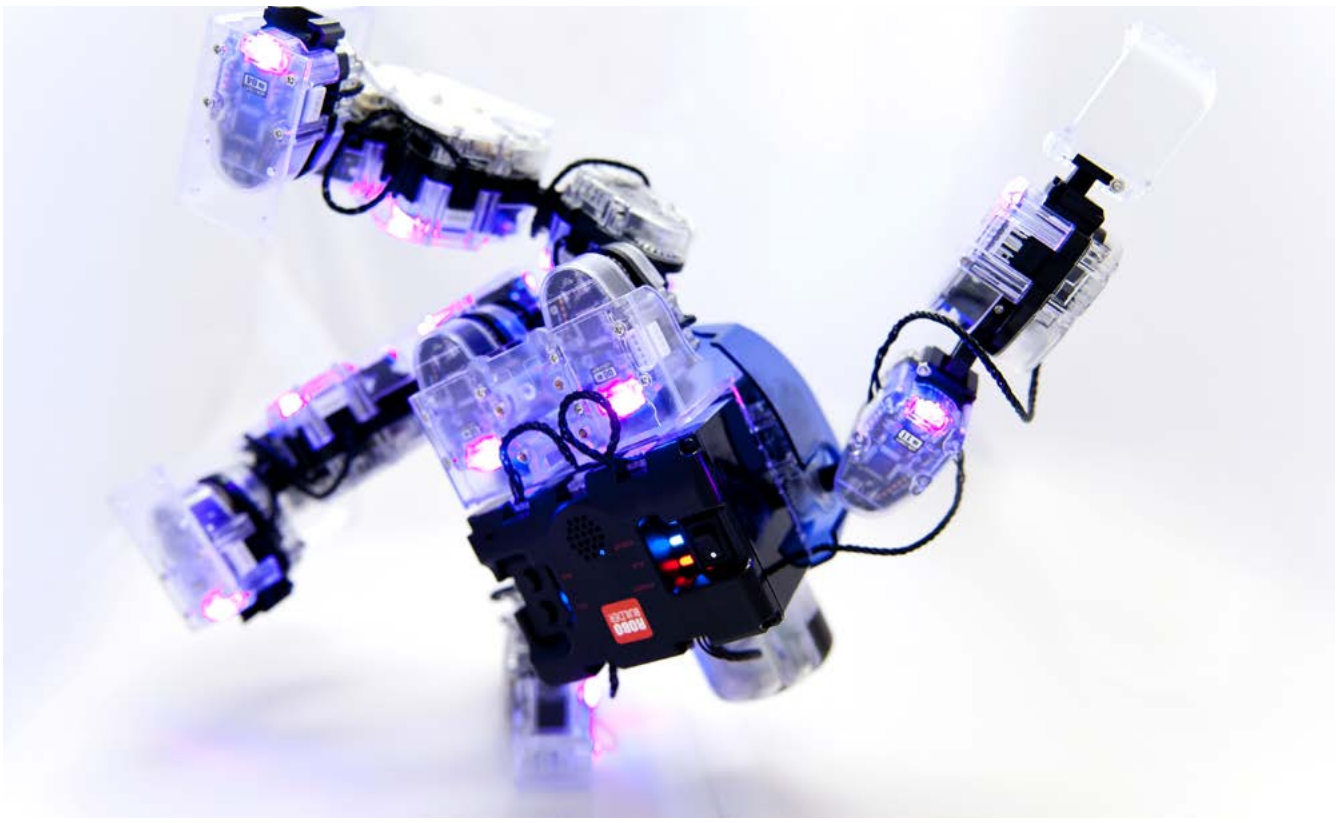
Certificate of Foundation Studies Suitable for students wishing to increase their English language skills and attain University Entrance. This may be a one or two-semester programme depending on your background in maths, physics and chemistry. This is then followed by taking the one-semester Certificate in Science and Technology to get you up to speed in maths and physics and/or chemistry.

I HAVE STUDIED AT ANOTHER INSTITUTION AND WISH TO CREDIT MY PREVIOUS STUDY

If you have completed the NZ Certificate in Science, The National Diploma in Engineering, or an equivalent qualification, you may be granted credit, including part or all of the First and Second Parts. The credit granted will take into account the areas of study and the standard of pass attained in your previous study. You must submit a credit application if you want credit of courses and/or other tertiary qualifications you have completed, which could count towards your Massey qualification.

I'M NOT SURE WHETHER MY QUALIFICATION ALLOWS ME ADMITTANCE

Contact our Student Advice and Information team.
Phone: 0800 MASSEY
Email: courseadvice@massey.ac.nz



BACHELOR OF FOOD TECHNOLOGY WITH HONOURS

BFoodTech(Hons)

KEY FACTS
AVAILABLE AT AUCKLAND
AVAILABLE AT MANAWATŪ
EQUIVALENT TO 4 YEARS OF FULL-TIME STUDY

A GOOD FIT IF YOU

- Are creative
- Enjoy sciences and are interested in engineering
- Want to know about the technology used to make food, the engineering behind it
- Are interested in progressing to management, or starting your own business

WHAT IS IT LIKE?

Food is an important part of our everyday life. The focus on health and wellbeing through food consumption is increasing. The world's economies are looking for new ways to add value to raw produce. All this adds up to excellent salaries and an increasing demand for people with the skills you will gain by studying food technology.
Massey University's Food Technology programme has been producing graduates for the New Zealand and international food industries for the last 50 years.
It is the only degree in Australasia that combines food science, food engineering and food business. That gives you more than a food science degree – as well as fundamental science, mathematics and statistics, you'll gain applied sciences, technology, engineering and business skills to apply your knowledge in the commercial world. Fifteen out of your 32 courses are fully-focused on food.

AN INTERNATIONALLY-RECOGNISED FOOD TECHNOLOGY PROGRAMME

- Both majors of the BFoodTech(Hons) programme are approved by the US-based Institute of Food Technologists (IFT). It is one of only a handful of programmes outside the Americas to have achieved this recognition.
- The Food Product Technology major is also provisionally accredited by the Institute of Professional Engineers New Zealand (IPENZ) as a professional engineering degree under the Sydney Accord, an international agreement (equivalent to a three-year engineering degree). As this major is all about developing food products then a large proportion of the degree will cover food technology with the equivalent of three years of engineering.
- The Food Process Engineering major also has provisional accreditation by the Institute of Professional Engineers New Zealand (IPENZ) as a professional engineering degree under the Washington Accord, an international agreement (equivalent to a four-year engineering degree). As this major is all about developing food processes then more engineering is required hence its equivalence to a four-year engineering degree.

WORK ON REAL FOOD INDUSTRY ISSUES

Massey's food technology programme teaches you the fundamental and applied food technology skills that you will need in your career. You learn not only through the classroom, but also in practical laboratory and workshop sessions that focus on real industry problems and solutions.

MORE WORK EXPERIENCE DURING YOUR STUDY

At Massey you're required to complete 900 hours of approved summer vacation employment (over three summer breaks). This is more than other food qualifications in New Zealand and means that you come out with a broader understanding of the food industry, great references for your CV, and will be ready to start work from the day you graduate.
In your first year you will work on a problem set in the future and come up with creative solutions to that problem. You are required to present your work in this course on a website that you create, which is viewed by potential clients. Some fantastic websites have been developed out of this project. This gives you valuable skills in communicating your work.

MAJORS

There are two majors in the BFoodTech(Hons) degree:

- Food Process Engineering: you will focus on engineering principles, learning how to design processes and use technology to create effective food production systems.
- Food Product Technology: you will learn how to lead and manage food product development from idea generation to product launch.

ENTRY REQUIREMENTS

Entry into the Bachelor of Food Technology with Honours will be guaranteed to applicants who gain University Entrance and the appropriate level of achievement at secondary school or via other preparatory programmes as listed below:

NCEA LEVEL 3

- Mathematics; algebra, differentiation and integration (16 credits)
- Physics (16 credits)
- Chemistry (14 credits)

Guaranteed entry requires the following externally assessed Level 3 Achievement Standards:

- Mathematics: 91577, 91578, 91579
- Physics: 91523, 91524, 91526
- Chemistry: 91390, 91391, 91392

INTERNATIONAL BACCALAUREATE

Diploma with 29 points including at Higher level (HL):

- Mathematics (5 Points)
- Physics (5 Points)
- Chemistry (5 Points)

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

A level in:

- Mathematics (C Grade)
- Physics (C Grade)
- Chemistry (C Grade)

We recommend A Level candidates study:

- Pure Mathematics 1 (P1) and Pure Mathematics 3 (P3)

MASSEY UNIVERSITY

- 160.103 Introductory University Mathematics (C Grade) OR 160.132 Concepts in Maths (C grade)
- 124.100 Introductory Physics (C Grade)
- 123.103 Introductory Chemistry (C Grade)

If you do not achieve the required entry standard that will guarantee selection into the Bachelor of Food Technology with Honours, your application will be assessed on an individual case by case basis.

ALTERNATIVE ENTRANCE PATHWAYS

SUMMER COMPACT COURSES (AUCKLAND CAMPUS ONLY)

These intensive courses are for students that need extra preparation in mathematics, physics or chemistry. Students are advised to take only two introductory subjects. They can be taken as a Certificate of Proficiency and can be put towards another qualification in the BSc, BInfSci and BBus. If you prefer to study at a slower pace, equivalent preparatory courses are available via Distance Learning for chemistry, physics and mathematics. Year 13 students should apply for Discretionary Entrance.

CERTIFICATE IN SCIENCE AND TECHNOLOGY

This one-semester pathway is for students who need extra preparation in mathematics, physics or chemistry. You must have achieved 16 Credits in NCEA Level 2 Mathematics (or equivalent) before you enrol into Massey's introductory physics, mathematics courses.

DIPLOMA IN SCIENCE AND TECHNOLOGY

A two-semester pathway for students needing more preparation in mathematics, physics or chemistry. You can also choose from biology, programming, statistics, food, accounting, marketing, finance, and management.

DIRECT ENTRY ENGLISH PATHWAY

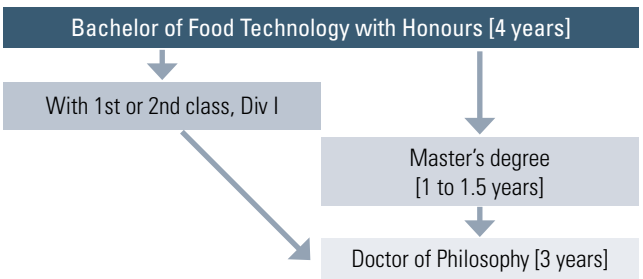
This 16-week pathway is suitable for students wishing to increase their English language skills.

CERTIFICATE OF FOUNDATION STUDIES

A one or two-semester programme suitable for students wishing to increase their English language skills and attain University Entrance.

PATHWAY TO POSTGRADUATE STUDY

ENROL IN...



DEGREE CONTENT AND STRUCTURE

WHAT ARE THE MAJORS?

There are two majors available: Food Process Engineering; and Food Product Technology. For both majors you will be enrolled in identical courses for the first 2.5 years of the degree. You can change majors at any time up to the end of Semester One in your third year.

You will be expected to spend on average 40 hours per week on study, which includes attendance at lectures, tutorials and laboratories, completing assessments and self-directed study.

The standard time required to complete the BFoodTech(Hons) is four years. You will be required to pass 480 credits of courses to graduate.

WHAT DOES IT COST?

The BFoodTech(Hons) is a four-year Honours degree. Fees will be charged according to the academic level. This means that Years 1-3 will be charged at the undergraduate course rate and Year 4 (an honours year) will be charged at the postgraduate course rate.

Food Technology Practice Project Spine 'learn by doing'

Course Profiles

Part 1	141.111 Food Tech 1: Global Perspectives	141.112 Food Tech 2: Creative Solutions	228.171 Engineering Maths 1 A	228.172 Engineering Maths 1 B	124.171 Phys Princ for Eng & Tech 1	124.172 Phys Princ for Eng & Tech2	123.171 Chemistry for Biological Systems 1	123.172 Chemistry for Biological Systems 2
Part 2	141.211 Food Tech 3: Product Development	141.212 Food Tech 4: Manufacturing	228.271 Engineering Maths 2	280.201 Industrial Microbiology	280.271 Heat & Mass: Conservation & Transfer	280.272 Fluid Flow & Particle Technology	123.201 Chemical Energetics	123.271 Molecules to Materials
Part 3	141.311 Food Tech 5: Food Micro & Safety	141.312 Food Tech 6: Food Charac-terisation	228.371 Stat Modelling for Engineers & Technologists	141.362 Food Formulation Technology	141.395 Food Chemistry	280.371 Process Engineering Operations	280.372 Reaction Tech & Process Modelling	Major specific course
Part 4	Design project		Individual Research Project		141.710 Food Pckg Eng & Legislation	141.723 Ind Systems Improvement	Major specific course	Major specific course

Project	Core course	Major course

CAREERS

There is a wide range of employment opportunities when you graduate with your Bachelor of Food Technology with Honours in New Zealand and around the world.
Career progression in the food industry can be rapid. You may start out with a technical role – often the stepping stones to leadership positions in the industry – or you could set up your own business.

SOUGHT-AFTER BY EMPLOYERS

You will be sought after by the food industry. Massey graduates are renowned for their ability to co-ordinate product development, process development, quality management and production management. They are also known for their ability to become specialists in specific technical areas such as food microbiology, food chemistry and packaging technology.
The wide variety of roles in the food technology industry include:

- Food technologist: researching new foods and drinks and developing new products, packaging or processes
- Product development technologist: developing products from concept to product
- Process technologist: improving and fixing food product processes
- Process engineer: developing new technology that makes food production processes better
- Flavour technologist: developing flavour and texture innovations
- Packaging technologist: developing more efficient or sustainable food packaging

Others include quality manager, food safety manager, production team leader, technical sales and support, winemaker or brewer, food microbiologist or food chemist. Or you could further your studies with a postgraduate research project, or become a teacher.

ROY BIGGS National Technical Manager, Tegel Ltd.
"'Massey graduates make very good employees. They have the requisite technical skills and practical experience of working in the food industry. Over the last few years we have employed Massey graduates in planning, marketing, product development, procurement and in the more traditional quality/technical roles. They have a well-developed work ethic and many have been rapidly promoted into very responsible roles; one is a quality manager on a very large site, the other is the demand planner for a company. Massey graduates have certainly made a significant contribution. They are very 'marketable' straight from university."

BRAD O'CALLAGHAN
Bachelor of Food Technology with Honours (Food Product Technology).
Assistant Process Engineer, FoodBowl
I assist clients with manufacturing and the full set-up and clean-down of the process equipment. I also work with the latest in novel food processing technologies to help assess their ongoing viability as methods to process food and ensure food safety throughout the supply chain.
It's so exciting to be working as part of the New Zealand Food Innovation Network. Through Massey's staff and the summer work placement, I was able to make some strong industry contacts. The degree is very well known in the industry and the preferred qualification for many employers. The Massey programme was extremely thorough and definitely tested us in all aspects. It was definitely worth it. I felt fully prepared for my career in the industry.
I was lucky enough to work with Olivado NZ Limited, producers of premium avocado oil products, based in Kerikeri. The project allowed me to work independently on developing a processing method to recover a by-product from the oil and then developing possible applications in food and cosmetic products. My advice is "Go for it!" If you love food and science, it's a natural fit and it has a nice amount of engineering and business mixed in too. It's truly been the best decision of my life!

RICS the mark of property professionalism worldwide | Accredited course

PAQS

KEY FACTS

AVAILABLE AT AUCKLAND (INCLUDES BLOCK MODE TEACHING)
SOME COURSES AVAILABLE VIA DISTANCE LEARNING WITH COMPULSORY ON CAMPUS CONTACT WORKSHOPS
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY

BACHELOR OF CONSTRUCTION

BConst

A GOOD FIT IF YOU

- Are interested in buildings and how they are constructed
- Are looking for a career where no two days are the same and you are not stuck behind a desk
- Are interested in a career offering great salaries, and rapid progression to management

Join the only construction qualification in New Zealand accredited by the Pacific Association of Quantity Surveyors (PAQS) and the NZ Institute of Quantity Surveyors (NZIQS) and Royal Institute of Chartered Surveyors (RICS). The Bachelor of Construction will help you become a construction expert who can contribute to all sectors of the construction industry, highly sought-after by employers and internationally recognised.

WHAT IS IT LIKE?

The Massey University Bachelor of Construction will teach you how to develop and implement best practice building solutions and construction management techniques. You'll learn how to add value to the sustainable development of the built environment, and its use, by integrating sound technical and theoretical knowledge with industry experience, management and interpersonal skills.

SOUGHT-AFTER BY EMPLOYERS

There is great demand for people with a Bachelor of Construction. Most students are offered employment before they have even completed their qualification.

EXCELLENT SALARIES AND CAREER PROGRESSION

As a construction graduate you will be in line for the excellent starting salaries that are available in the industry. As you progress through your career, salary levels remain higher than for many other sectors. Many graduates are able to have their own business within 10 years of graduation.

RAPID CAREER PROGRESSION

There are opportunities in all sectors of the built environment including new construction and civil projects, building restoration, earthquake strengthening and insurance valuation. Construction graduates gain employment within dynamic teams and can be equipped to lead significant developments within a few years of graduation.

RELEVANT TO INDUSTRY

There are two majors available – Quantity Surveying and Construction Management. These majors focus on relevant industry sectors, such as:

- Project management consultancy
- Buildings renovation and earthquake strengthening
- Construction companies
- Development consortia
- Local authorities and regulatory bodies
- Property development or property management
- Industrial and commercial building services
- Insurance rebuild costs

The Bachelor of Construction is a three-year degree (or 3.5 years if you commence your study in Semester Two).

DIGITAL TECHNOLOGY IS INTEGRAL TO YOUR LEARNING

All courses have an online teaching component and you can use your tablet or smartphone to ask or answer questions during lectures. Some assignments will require you to prepare a video of your work. Core courses for construction will teach you vital digital skills including computer-aided drawing and computer modeling of buildings (BIM).

FLEXIBILITY

Although you need to choose a major when you enrol, you can change from one major to another after one year of study. You can choose to complete your final year in distance mode. This means that you can continue to study while gaining valuable work experience and starting to earn the excellent salaries that are available to you with your qualification.

YOUR FIRST YEAR

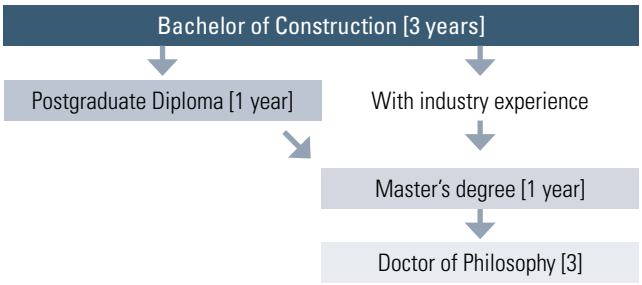
You will learn about building and construction, materials and computer-aided design. Along with this you'll gain knowledge in accounting, law, finance and construction economics. You'll also be introduced to the built environment and measuring systems.

MAJORS OR ENDORSEMENTS

- Construction Management on page 64
- Quantity Surveying on page 65

PATHWAYS TO POSTGRADUATE STUDY

ENROL IN...



GAIL ROYSTON, Bachelor of Construction, Graduated 2015
Assistant Cost Manager – Beca
I was able to work and study full time due to Massey's flexible distance learning. That means that although I've only been out of university for one and a half years I have almost four years of experience in the industry. This has given me the opportunity to work in places like Auckland, Christchurch, Malaysia and now Europe and do what I love – travelling.
The Massey construction degree has helped me get to where I am and allowed me to work on international projects that have English, French and Spanish people working together to deliver projects. Construction is an exciting industry and I'm happy to be part of it. I'm lucky to have such amazing role models and mentors around me that push me to be the best I can be.

Gail was the recipient of the New Zealand Top Young Woman in Construction award 2015 and a finalist for the European Women in Construction and Engineering (WICE) awards as the Best Young Women in Construction 2016.

CAREERS

Quantity surveyors are typically involved in the feasibility, costing and financial control of projects. Construction managers are typically involved in managing the health and safety and resource optimisation of projects. Both disciplines are vital to the successful conclusion of exciting projects from new commercial buildings, bridges and motorways, housing estates, and development of waterfront sites. Graduates may be self-employed or act as consultants for clients or banks, or work for a contractor. Bachelor of Construction graduates will enjoy varying and challenging careers across a range of industries and sectors.

- Professional quantity-surveying practices
- Construction companies
- Development consortia
- Local authorities and regulatory authorities
- Allied sectors such as insurance

KEY FACTS

AVAILABLE AT AUCKLAND
(INCLUDES BLOCK MODE TEACHING)
SOME COURSES AVAILABLE VIA DISTANCE LEARNING
WITH COMPULSORY ON CAMPUS CONTACT WORKSHOPS
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY

CONSTRUCTION MANAGEMENT

A major of the BConst

A GOOD FIT IF YOU

- Are interested in a career offering great salaries, and rapid progression to management
- Are an organised person
- Like meeting new people and work well in teams

MANAGE THE BUILDINGS OF THE FUTURE, AND MAKE YOUR MARK ON THIS GROWING INDUSTRY

With Massey's Bachelor of Construction (Construction Management) you will be able to make your mark on this growing industry. Most of our domestic students have a cadet position before they have finished their degree.

SOUGHT-AFTER BY EMPLOYERS

There is great demand for people with a Bachelor of Construction. Most students are offered employment before they have even completed their qualification.

SKILLS EMPLOYERS SEEK

You will contribute to client needs assessment and offer advice on resolving buildability issues at the design stage. You'll plan, schedule, and organise for implementation of new construction projects and refurbishment or conversion of existing buildings. That includes making sure that things stay on track – financially, quality and time-wise and that you are meeting legal requirements.

You can follow your passion and create your own niche – you may be interested in sustainable construction. You could be an advocate for obligations for social and environmental friendliness in buildings, including minimising the adverse impact of the development process on society and the environment.

CAREERS

Potential careers include:

- Construction project management
- Construction and property development
- Consultancy
- Facilities management
- Government
- Insurance
- Mining
- Oil and gas
- Banking

KEY FACTS

AVAILABLE AT AUCKLAND
(INCLUDES BLOCK MODE TEACHING)
SOME COURSES AVAILABLE VIA DISTANCE LEARNING
WITH COMPULSORY ON CAMPUS CONTACT WORKSHOPS
EQUIVALENT TO 3 YEARS OF FULL-TIME STUDY

QUANTITY SURVEYING

A major of the BConst

A GOOD FIT IF YOU

- Enjoy economics and mathematics
- You enjoy working in teams, but you are also comfortable working independently
- Are interested in a career in the building industry
- You would like rapid progression to management

MAKE SURE THE MONEY IS THERE TO BUILD THE BUILDINGS

Work on projects from start to finish, particularly ensuring they are well managed financially. Most of our domestic students have a cadet position before they have finished their degree.

CAREERS

When you graduate you could work in a number of areas, with a key role being working on the budgeting of construction projects. You'll prepare tender and contract documentation and undertake project appraisals, produce contract documentation, offer procurement advice, and carry out tender planning and adjudication at the tendering stages.

You liaise between the client and the construction company, draft and provide advice on contracts, manage subcontractors and a number of other roles. You may also undertake wider roles including arbitration, project management, expert witness, negotiations and dispute resolutions.

BRAD COLEY Bachelor of Construction (Quantity Surveying)
Graduated in 2016. Quantity Surveyor, Rider Levett Bucknall

After eight years working as a qualified builder, at 26 I was keen to get off the tools and move into more of a management role. I applied for a few jobs and kept being told the same thing – that they would prefer I had completed a Bachelor of Construction, so that is what I did.

Massey was one of two places that offered the course. It was closer to home, and a university rather than a tech so I figured the degree would be better recognised because of this.

I got a scholarship in my second year, which was great; this enabled me to work for the best independent quantity surveying company in the world – Rider Levett Bucknall. This also allowed me to work in the industry while studying, which made my studies even more interesting as I could apply the theory I was learning in class at work.

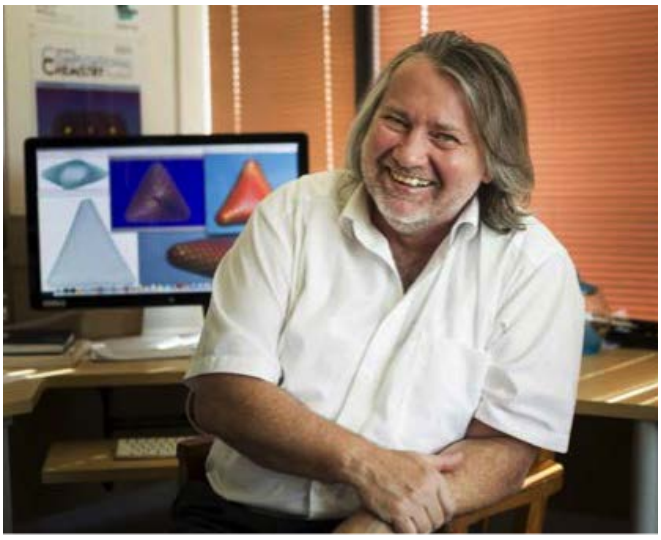
I have been in a quantity surveying position at Rider Levett Bucknall since I got the scholarship. This has meant I have gained experience on a variety of large construction projects in the commercial, residential, civil and public sectors.

I want to continually develop professionally and am trying my best to climb the ladder to the top.

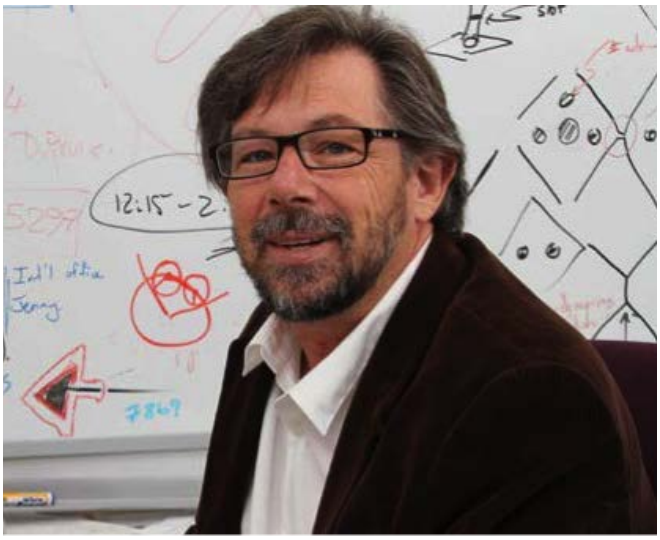
POSTGRADUATE STUDY

As you near the end of your undergraduate degree you may start thinking about the next stage in your science education. You can gain deeper knowledge and more specialised skills with postgraduate studies. Massey's Auckland campus has a large graduate programme with more than 100 students working on a diverse range of projects. Students work with our academics, many of whom are international leaders in their fields. Many of our researchers work together across the science disciplines, bringing together world-leading professors to see what breakthroughs can arise. You can join us.

- **PETER SCHWERDTFEGER** Distinguished Professor Quantum Chemistry and Physics.
  When Peter Schwerdtfeger won the Royal Society of New Zealand's most prestigious science award, the Rutherford Medal, he was described by the judges as one of our most brilliant and internationally sought-after scientists.
  Originally from Germany, Peter's research has provided a deep insight into how atoms and molecules interact at the quantum level. He works on fundamental aspects of chemical and physical phenomena in atoms, molecules and condensed matter. His approach to science is truly inter-disciplinary, ranging from chemistry to physics, computer science and mathematics.
  In 2013, he and a team of researchers solved the long-standing problem of why mercury is the only metallic element that is liquid at room temperature. He has received many national and international awards and offers of work and chooses Auckland. He says: "We've got top people who regularly publish in top international journals. I think we are quite unique in this country."



- **GAVEN MARTIN** Distinguished Professor
  Gaven Martin was New Zealand's youngest-ever professor at the age of 32, and is now one of the world's top mathematicians. He's earned international accolades, medals, been made a member of prestigious international societies, and has made breakthroughs that put him up there with the world's best mathematicians today.
  His CV includes appointments at some of the top universities in the world– Yale, Berkeley, Michigan and ANU, with awards and fellowships from all around the world – the USA, Italy, France, Germany, Scandinavia and the Middle East.
  Today, his research interests include non-linear analysis, elliptic partial differential equations and geometric function theory, particularly as it interacts with conformal geometry, quasiconformal mappings and their generalisations. He also works in low dimensional topology and geometry and a bit of geometric group theory.
  He is not just a New Zealand mathematical treasure, but a global one.



TE ARA WHAKAMUA KI MASSEY YOUR ROAD TO SUCCESS AT MASSEY

JUST FOLLOW THESE STEPS

1. WHAT ARE YOU INTERESTED IN?

You can find more detailed information about our core degrees by visiting **study.massey.ac.nz** and complete this process online.

2. NEED MORE INFORMATION?

Once you know what you want to study, use the resources listed on page 68 to find or request more information.

3. WHERE CAN I STUDY?

You can study at one of our campuses in Auckland, Manawatū or Wellington, and/or via distance learning. It really is up to you. To view our campus videos, visit our campus web pages at **campuses.massey.ac.nz**

4. CHECK OUT ENROLMENT DATES AND SELECTION CRITERIA

You can apply for 2017 and 2018 now. You'll need to be aware some degrees have special selection criteria and early application dates.

5. NEED ACCOMMODATION?

Applications open on 1 August and you need to apply before 1 October to be in the first round of offers. Make sure you apply online at **accommodation.massey.ac.nz.**

6. CHECK OUT OUR SCHOLARSHIPS

There are more than 350 individual scholarships to choose from every year. Many close on 30 August. Check out **awards.massey.ac.nz**

7. ENROL

Once you know what, how and where you want to study, it's time to enrol for your future! You can enrol online at **enrol.massey.ac.nz**

Please note there are several degrees that require you to go through a selection process before you can enrol. These include: Diplomas in Fashion Design and Technology, Photography, and Bachelor degrees in Aviation, Design, Fine Arts, Māori Visual Arts, Nursing, Social Work, Speech and Language Therapy, and Graduate Diplomas in Design, Fine Arts, and Teaching.

There are several easy options to contact us if you need help. You can visit us on-campus in Auckland, Manawatū or Wellington, or see:

Call: **0800 MASSEY**
Email: **contact@massey.ac.nz**
Text: **5222**
Web: **massey.ac.nz**

KEY DATES

2017

30 August	Scholarships applications due
1 October	All accommodation applications due
20 November	Summer School starts

2018

12-17 February	Summer School exams
26 February	Semester one and double semester starts
1 June	Semester one lectures end
11-23 June	Semester one exams
23 June	Semester one ends
16 July	Semester two begins
29 Oct– 14 Nov	Semester two and double semester exams
14 November	End of semester two/double semester
19 November	Summer School starts

Some of the dates for 2018 may be subject to change. Check **massey.ac.nz** closer to the time for up-to-date information.

CONTACT MASSEY FOR MORE INFORMATION

MASSEY.AC.NZ

Our website is full of useful information covering everything you need to know – from what each campus has to offer, their departments and qualifications, scholarships, events, accommodation and plenty more.
And don't forget to bookmark the Massey site – it's constantly being updated with the latest information.

CALL OUR CONTACT CENTRE

If you'd rather speak to a real person feel free to give our friendly contact centre staff a call on **0800 MASSEY**.
Or, if you'd like to actually see a real person, drop in to our campuses in Auckland, Palmerston North or Wellington.

STUDENT ADVISERS

We have heaps of people available to answer any questions you may have about studying with us. We understand it's a big decision. To speak to someone, or to get someone to visit your school or workplace:
Phone: **0800 MASSEY**
Text: **5222**
Email: **academicadvice@massey.ac.nz**
Dedicated international, Māori and Pasifika student advisers are also available.

'YOUR GUIDE TO' BOOKS

We produce a range of 'Your Guide To' books grouped around particular interest areas. They provide details of entry requirements, majors, course structures and career outcomes covering all our qualifications.
To obtain copies of 'Your Guide to' books:
Download them at **publications.massey.ac.nz**
Phone: **0800 MASSEY**
Text: **5222**
Email: **contact@massey.ac.nz**

EVENTS

Another great way to see for yourself what life and study is like at Massey is at one of our open days. You'll learn about Massey's qualifications, career opportunities, accommodation options, campus facilities, and get to talk to lecturers and current students.
Manawatū Open Day: 2 August 2017
Auckland Open Day: 12 August 2017
Wellington Open Day: 1 September 2017

We also have stands at various career and tertiary education expos held all over New Zealand (and beyond).
If you want to know where you'll see us next, call **0800 MASSEY**, text **5222**, email **contact@massey.ac.nz** or visit **massey.ac.nz/events**

FACEBOOK.COM/MASSEYUNIVERSITY

We have our own Facebook page which you can join to keep up to date with what is happening at Massey before you come to study with us.

TWITTER

You can also follow us on Twitter **@MasseyUni**

INSTAGRAM

And follow us on Instagram **@MasseyUni**

YOUTUBE

There are heaps of videos to check out on our channel. Go to **youtube.com/masseyuniversity**

INTERNATIONAL STUDENTS

We welcome more than 3,800 International Students from 100 countries each year. The International Office is the first point of contact for prospective students. If you are considering studying at Massey we welcome your enquiry and look forward to helping you join us.

FOR MORE INFORMATION

Phone: **+64 6 350 5701**
Email: **international@massey.ac.nz**
Web: **massey.ac.nz/international**

YOUR NEXT STEP

VISIT US ON CAMPUS

16-17 MAY
AUCKLAND CAMPUS INFORMATION EVENINGS

22 JUNE
WELLINGTON CAMPUS INFORMATION EVENING

2 AUGUST
MANAWATŪ OPEN DAY

12 AUGUST
AUCKLAND OPEN DAY

1 SEPTEMBER
WELLINGTON OPEN DAY

0800 MASSEY (627 739)

MASSEY.AC.NZ

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