

# Sciences, Agriculture & Technology Guide

2024



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# Welcome

## FROM PROFESSOR RAY GEOR, PRO VICE-CHANCELLOR, COLLEGE OF SCIENCES

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 unique educational programmes that combine innovative academic study and the excitement of discovery. With the support and intellectual capabilities of a diverse community, you will learn within a truly unique interdisciplinary atmosphere.

You will become a student in a community of world-leading research groups. Our excellent teachers will guide you through your studies. We provide you with transformative learning experiences to prepare you for success in your chosen field, and together we can deliver globally relevant solutions to fundamental and applied scientific challenges.

Our degrees provide the in-depth knowledge 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 to achieve your goals.

Sciences and technology are great study choices for an exciting and rewarding career, and we look forward to welcoming you to Massey University.

# Studying Sciences, Agriculture and Technology

Massey graduates are advancing knowledge and making a difference. The sciences offer a wide and exciting range of options for study. Those who understand science have an important part to play in our future.

Science is key in our professional and applied learning qualifications, including our veterinary qualifications, construction, engineering, food technology and information sciences.

Massey's heritage is in science and agriculture. Leaders in their fields came to New Zealand to teach students and develop the research qualifications that underpin New Zealand's success today.

The University continues to attract leading researchers from around the world who choose to base themselves in New Zealand and continue to work in internationally leading research.

Our students benefit from these thought leaders, their involvement in the latest findings and their connections to fellow expertise around the world.

## PATHWAYS FOR SCIENCES

Your successful future matters to us, and we will help you get to where you want to be. If you don't have University Entrance we can help. Take a look at our Fast Track Foundation (Certificate of University Preparation). If you have University Entrance and need to catch up on one or more subjects then look at the next page or the information on our website.

## SCHOLARSHIPS – GO ON, APPLY!

New Zealand's science institutions want employees who know their industry and invest in the future workforce by providing scholarships to students. Why not fund your study with a share of the dollars on offer every year? For more information visit: [massey.ac.nz/scholarships](https://massey.ac.nz/scholarships)

## TRAVEL WHILE YOU STUDY

Our Student Exchange Programme provides an international experience with the chance to study courses at overseas universities and cross-credit them back to a Massey qualification. You will pay the same tuition fees while abroad and it's a great chance to gain the overseas experience and knowledge that many employers value. Some of the top science universities available within the exchange programme are:

- > Nanyang Technological University, Singapore
- > University of Calgary, Canada
- > University of California, USA
- > University of Edinburgh, Scotland
- > University of Wisconsin-Madison, USA
- > Wageningen University, The Netherlands.

To enquire or apply visit [massey.ac.nz/studyabroad](https://massey.ac.nz/studyabroad)

## POTENTIAL CAREERS

- |                               |                      |
|-------------------------------|----------------------|
| > Agronomist                  | > Physiologist       |
| > Construction manager        | > Plant biologist    |
| > Ecologist                   | > Rural valuer       |
| > Engineer                    | > Software developer |
| > Farm consultant             | > Software engineer  |
| > Farm manager                | > Statistician       |
| > Food Scientist/Technologist | > Veterinarian       |
| > Mathematician               | > Wildlife biologist |
| > Microbiologist              | > Zoologist.         |

## Am I ready for study?

If you need to study some preparatory courses prior to commencing your qualification then you should enrol in a Certificate of Proficiency<sup>1</sup>. If you need more courses then you enrol in a Certificate in Science and Technology<sup>2</sup>. You should complete these preparatory courses before commencing your qualification study. Some preparatory courses are available in our Summer School.

I AM UNDER 20 AND HAVE UNIVERSITY ENTRANCE BUT AM MISSING (OR FEEL I WILL MISS) A FEW IMPORTANT SUBJECTS OR I AM UNDER 20 AND DO NOT HAVE UNIVERSITY ENTRANCE (UE)					
I HAVE:					
<ul style="list-style-type: none"> <li>&gt; Achieved at least 50 credits in approved subjects at NCEA Level 2 or above. These include at least one of:               <ul style="list-style-type: none"> <li>&gt; Literacy: 18 credits at Level 1 or higher</li> <li>&gt; Mathematics: 10 credits at NCEA Level 1 or higher.</li> </ul> </li> </ul> <p>I would like to study a...</p>		<ul style="list-style-type: none"> <li>&gt; Achieved NCEA Level 2 with Excellence or Merit</li> <li>&gt; Plenty of sciences standards at Excellence or Merit</li> <li>&gt; Literacy and Numeracy</li> <li>&gt; I wish to progress to university soon.</li> </ul> <p>I would like to study a...</p>		<ul style="list-style-type: none"> <li>&gt; 14 NCEA Level 3 credits in an approved subject</li> <li>&gt; 10 credits each in two other subjects</li> <li>&gt; Literacy and numeracy</li> </ul> <p>I would like to study a...</p>	
BSc majoring in: Chemistry, Maths, Statistics BVSc BE(Hons) BFoodTech(Hons)	BSc (majors other than in column to the left) BInfSc BConst BAGSci BAGribusiness BHortSci BAnSci	BSc majoring in: Chemistry, Maths, Statistics BVSc BE(Hons) BFoodTech(Hons)	BSc (majors other than in column to the left) BInfSc BConst BAGSci BAGribusiness BHortSci BAnSci	BSc majoring in: Chemistry, Maths, Statistics BVSc BE(Hons) BFoodTech(Hons)	BSc (majors other than in column to the left) BInfSc BConst BAGSci BAGribusiness BHortSci BAnSci
<b>APPLY FOR THE...</b> <b>Certificate in Foundation Studies<sup>3</sup></b> Take science-focused courses, then progress to the <b>Certificate in Science and Technology<sup>2</sup></b> and then to the Bachelor degree.	<b>APPLY FOR THE...</b> <b>Certificate in Foundation Studies<sup>3</sup></b> Take the Science Pathway courses.	<b>TALK TO US</b> For these specialist qualifications, you should do Year 13. If you missed Year 13 consider the <b>Certificate in Foundation Studies<sup>3</sup></b> (to the left). You may be admitted to a <b>Certificate in Science and Technology<sup>2</sup></b>	<b>TALK TO US</b> Apply for <b>Discretionary Entrance</b> . You may be able to enter the <b>Certificate in Science and Technology<sup>2</sup></b> NOTE: If you have progressed more than halfway through the NCEA Level 3 year you will not be eligible for discretionary entrance before July in the following year.	<b>TALK TO US</b> Consider applying for the <b>Certificate of University Preparation<sup>4</sup></b> Then, progress to a <b>Certificate in Science and Technology<sup>2</sup></b> in preparation for one of these qualifications.	<b>TALK TO US</b> <b>Certificate of University Preparation<sup>4</sup></b> Then, progress to a <b>Certificate in Science and Technology<sup>2</sup></b> in preparation for one of these qualifications. Some courses studied for the Diploma may count towards your bachelor's degree.

1. See details for the Certificate of Proficiency (Undergraduate), CoP, at: <https://www.massey.ac.nz/study/all-qualifications-and-degrees/certificate-of-proficiency-undergraduate-CPUND/>

2. See details for the Certificate in Science and Technology, CertScTech, at: <https://www.massey.ac.nz/study/all-qualifications-and-degrees/certificate-in-science-and-technology-UCSCT/>

3. See details for the Certificate in Foundation Studies, CertFoundStud, at: <https://www.massey.ac.nz/study/all-qualifications-and-degrees/certificate-in-foundation-studies-SCFNS/>

4. See details for the Certificate of University Preparation, CertUniPrep, at: <https://www.massey.ac.nz/study/all-qualifications-and-degrees/certificate-of-university-preparation-SCUNP/>

## Where can I study?

We encourage students to do Year 13. Our qualifications, degrees and courses give you the in-depth knowledge and skills based learning employers want. We are flexible with what we offer and where you study. Our qualifications are taught on campus and by distance. Use the table below to help you choose the right course for you.

DEGREE NAME	AVAILABLE MAJORS	Auckland	Manawatu	Distance	DEGREE NAME	AVAILABLE MAJORS	Auckland	Manawatu	Distance	
<b>Bachelor of Agribusiness</b>	Farm Management		✓	✓	<b>Bachelor of Information Sciences</b>	Software Engineering	✓	✓	✓	
	International Agribusiness		✓	✓		<b>Bachelor of Science</b>	Chemistry		✓	
	Rural Valuation		✓	✓			Computer Science	✓	✓	✓
<b>Bachelor of Agricultural Science</b>			✓	✓	Earth Science			✓	✓	
	<b>Bachelor of Animal Science</b>	Animal Genetics and Breeding		✓		Ecology and Conservation	✓	✓		
Animal Nutrition and Growth			✓		Environmental Science		✓	✓		
Animal Welfare			✓		Exercise and Sport Science	✓				
Equine Science			✓		Human Nutrition	✓				
<b>Bachelor of Construction</b>	Construction Management	✓		✓	Mathematics	✓	✓	✓		
	Quantity Surveying	✓		✓	Microbiology		✓			
<b>Bachelor of Engineering with Honours</b>	Chemical and Bioprocess Engineering		✓		Molecular Cell Biology	✓	✓			
	Electronics and Computer Engineering	✓			Physiology	✓				
	Mechatronics	✓	✓		Plant Science		✓			
<b>Bachelor of Food Technology with Honours</b>	Food Process Engineering		✓		Psychology	✓	✓	✓		
	Food Product Technology	✓	✓		Statistics		✓	✓		
<b>Bachelor of Horticultural Science</b>			✓	✓	Zoology	✓	✓			
<b>Bachelor of Information Sciences</b>	Computer Science	✓	✓	✓	<b>Bachelor of Science (Honours)</b>	Psychology			✓	
	Data Science	✓		✓		<b>Bachelor of Veterinary Science</b>			✓	
	Information Systems	✓		✓	<b>Diploma in Dairy Technology</b>					✓
	Information Technology	✓	✓	✓	<b>Diploma in Facilities Management</b>				✓	



## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning\*
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

\*Some distance courses are not offered every year, and some distance courses have compulsory contact workshops

## A GOOD FIT IF YOU...

- > Would like to have a career associated with agriculture or horticulture
- > Are interested in the business/commercial side of farming
- > Would like to be a leader of this innovative industry.

## You will be in demand

At Massey many of our agribusiness students have jobs before they even graduate. From running large farm-based agribusinesses right through to international food trade, you will gain the skills and sound business knowledge to help progress the future of New Zealand's primary production sector, and to apply them overseas.

## Build your agribusiness career

New Zealand's economy is dominated by agriculture and food. The industry generates nearly \$50 billion in export earnings a year and international demand is predicted to continue to grow.

Massey's agribusiness programme aligns itself with agribusiness industries throughout the world. This ensures our graduates have the skills and industry knowledge employers need. As part of this programme, you will need to do at least 26 weeks of full-time work in agriculture. This is usually done during the summer, when work is readily available on farms and with rural businesses.

## What will you learn?

This three-year world-class programme will:

- > Ensure you will be a good analytical thinker able to interpret information to develop sound and innovative solutions
- > Give you an understanding of ethics, multi-cultural and international environments
- > Give you a strong understanding of what it takes to be sustainable and competitive in global food and fibre markets
- > Give you management skills applicable across primary industries
- > Help you develop into an effective communicator and a self-directed, independent learner

# Bachelor of Agribusiness

- > Teach you about farm production systems, supply chain management, marketing, food economies, and international agribusiness
- > Teach you to apply and integrate scientific, technological and business knowledge to meet marketplace demands.

## Options for study

You'll be required to select a major, or a focus for your study, during your degree. The three options for a major within the BAgribusiness are:

- > Farm Management - where you'll learn how to build and deliver profitable and sustainable businesses.
- > International Agribusiness - you'll learn how to go global with your agribusiness skills. You'll learn how agricultural products are created, marketed, and distributed internationally.
- > Rural Valuation - this major will offer practical skills to contribute to a sector that is integral to New Zealand's economy.

## Join a world-leading university

Our proud record dates back to 1927 when we offered New Zealand's first degrees in agriculture and horticulture. We have the largest Young Farmer's Club in New Zealand.

## CAREERS

New Zealand's agribusiness sector is flourishing, and there is strong demand for graduates. You will emerge with the knowledge and foundation skills for several career paths, including:

- > Business and consultancy
- > Economics and rural banking
- > Farm management and farm ownership
- > Government
- > International marketing
- > Rural valuation
- > Sales, purchasing and logistics

## SCHOLARSHIPS

There are many scholarships available for students who are studying in the areas of agriculture and horticulture. Many major New Zealand agricultural organisations provide scholarships for Massey students.

## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning\*
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

\* Some distance courses are not offered every year, and some distance courses have compulsory contact workshops

## A GOOD FIT IF YOU...

- > Would like to have a career associated with agriculture or horticulture
- > Are interested in the business/commercial side of farming
- > Would like to gain a broad range of skills in agribusiness.

The Bachelor of Agribusiness (Farm Management) prepares you for the demands of the farming business. From strategic to organisational skills, you will learn how to support profitable and sustainable businesses.

### You will learn about

- > Environmental sciences
- > Agricultural production systems
- > Food security and safety
- > Primary production technologies
- > Strategic management.

### Put agribusiness into perspective

The farm management major will give you the ability to interpret and put into perspective issues affecting farm and agribusiness managers. It offers an understanding of how and why managers make decisions and what impact those decisions have on their business and the wider industry.

### Practical experience while you study

Your learning will utilise case studies and will include field trips to provide experiential learning – from talking to and observing farmers.

You will gain practical experience. As part of this programme, You will need to complete at least 26 weeks of full-time work in agriculture.

# Farm Management

## A major of the BAgribusiness

### A growing, innovative industry

New Zealand's economy is dominated by agriculture and horticulture generating over billions in export earnings each year and international demand is predicted to grow.

### Relevant international knowledge

Massey's agribusiness programme aligns itself with agribusiness industries throughout the world. This ensures you will have the skills and industry knowledge employers want.





## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning\*
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

\*Some distance courses are not offered every year, and some distance courses have compulsory contact workshops

## A GOOD FIT IF YOU...

- > Are interested in agriculture and business
- > Want a career with an international perspective.

Does managing the marketing process of meat, kiwifruit, or milk to retailers in Tokyo or Switzerland excite you? How about sourcing and processing billions of litres of milk every year?

In the Bachelor of Agribusiness (International Agribusiness) You will learn about the global agri-food system. This includes everything from on-farm procurement in New Zealand to export and distribution of food and other agricultural products to consumers around the world.

### You will learn about

- > Primary production technologies
- > Agri-food value chains
- > Manufacturing
- > Distribution and logistics
- > International finance, and
- > The trade and marketing skills required to take New Zealand's agri-food industry to the global marketplace.

### Industry experience

Your learning will utilise case studies and field trips to local farms and businesses giving you the experience sought by employers. You will need to complete at least 26 weeks of full-time work in agriculture or horticulture, usually done over the summer when work is available.

### Research-led teaching

Our staff are active researchers. Massey's Agribusiness programme integrates the most recent developments and thinking into your learning.

# International Agribusiness

## A major of the BAgribusiness

### A growing, innovative industry

New Zealand's economy is dominated by agriculture and horticulture generating nearly \$50 billion in export earnings each year and international demand is predicted to grow.

### Relevant international knowledge

Massey's Agribusiness programme is aligned with agribusiness industries throughout the world. This ensures you will have the skills and industry knowledge employers want.



## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning\*
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

\*Some distance courses are not offered every year, and some distance courses have compulsory contact workshops

## A GOOD FIT IF YOU...

- > Are interested in the changing value of farmland
- > Think you would enjoy working with farmers to enhance their business
- > Would like to have a career associated with agriculture or horticulture.

Massey's Bachelor of Agribusiness (Rural Valuation) will help you build the skills you need to have a successful career in today's rural property market. Whether it's a dairy farm sale, estimation of orchard capital value, or getting a bank loan to purchase a new farm, almost every financial transaction involving land requires a valuation to support it.

You will learn about land-based systems and agribusiness. You will gain specialist valuation knowledge preparing you for opportunities in the rural property industry.

### A relevant programme

Visiting a wide range of farm properties is an integral part of the programme. This is essential to the relevance of your study of farm management, investment and valuation. You will also learn the communication skills you will need to operate within the industry and to work effectively with future clients.

You will cover a range of topics relevant to rural valuation such as property markets and resource management, property law and building technology.

### Practical experience while you study

You will gain a huge amount of practical experience. As part of this programme, you will need to do at least 26 weeks of full-time work in agriculture. This is usually done during the summer when work is readily available on farms and with rural businesses.

# Rural Valuation

## A major of the BAgribusiness

### A growing, innovative industry

New Zealand's economy is dominated by agriculture and food. It generates tens of billions in export earnings a year. International demand is predicted to continue to grow.

### Relevant international knowledge

Massey's Agribusiness programme aligns itself with agribusiness industries throughout the world. This ensures our graduates have the skills and industry knowledge employers want today, and in the future.

## CAREERS

The Bachelor of Agribusiness (Rural Valuation) provides the knowledge, skills and competencies to be a registered valuer. But there are also other exciting career opportunities in the rural property sector. Examples include:

- > Private practice firms as a generalist rural valuer
- > A specialist valuer with expertise in a class of property
- > Farm consultancy, property management planning
- > Rural banking
- > Insurance companies as a rural consultant
- > Real estate firms as a rural agent.

The requirements of lending institutions, local authorities, rental assessments, insurance valuations, and asset valuations for company accounts generate the bulk of valuation work in New Zealand.

The Property Institute of New Zealand (PINZ) is the professional organisation that you will most likely join as a rural valuation graduate. PINZ is closely involved with the development of Massey's courses and actively encourages students to get involved in the affairs of the local branch and become a member of the organisation.



## KEY FACTS

- > Available at Manawatū
- > Most courses available via Distance Learning, but not necessarily every year. Some distance courses have compulsory contact workshops.
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

## A GOOD FIT IF YOU...

- > Enjoy applied sciences
- > Are interested in a career in the primary agricultural industries.

### Join an industry with a wide range of future options

The Bachelor of Agricultural Science degree gives you the contemporary agriculture-related skills you will need to become a leader in this rapidly growing international industry.

Agriculture dominates New Zealand's economy – generating billions in export earnings every year.

You will dig into every aspect of agriculture. That includes pastures, crops, animal and soil sciences, economics, agribusiness, and the influence of Government policies, regulations and factors related to Te Tiriti o Waitangi. You will learn about future and present issues in the industry and gain skills in the use of technology in agriculture. Disciplines like engineering, chemistry and biology are also an important part of gaining a broad understanding of the primary industries.

### Experience before you graduate

Agricultural scientific experience is integrated into this degree. You will be able to experience and analyse real-world scenarios while you are studying. We align this programme with what employers are looking for – globally. Most agriculture students secure employment before they graduate.

### Variety

One of the best things about this degree is the variety of study. You will learn about animals and agriculture, soils and pasture, be introduced to agribusiness and decision-making skills. You will also study economics and soil science.

### Practical work

As part of this programme, You will need to do at least 26 weeks of full-time work in agriculture. This is usually done during the

# Bachelor of Agricultural Science BAGSci

summer when work is readily available on farms and with rural businesses.

### Award-winning facilities

Massey's Manawatū campus has internationally award-winning multi-function teaching laboratories, as well as the university's own working farms. These are unique in Australasia.

## SCHOLARSHIPS

There are many scholarships available for students who are studying in the areas of agriculture and horticulture. Many major New Zealand agricultural organisations provide scholarships for Massey students.

## CAREERS

The industry is made up of a huge range of organisations, including farming, processing and marketing produce, logistics of product supply, as well as the associated service industries such as banking, company technical representatives and consultants. That means there is a huge range of careers on offer for those with the right skills. Industries where agricultural science skills are utilised include:

- > Fertiliser
- > Seed
- > Banking
- > Biosecurity
- > Breeding
- > Consultancy
- > Agricultural production
- > Farm tourism
- > Management
- > Policy
- > Research and development
- > Sales and marketing
- > Teaching.

## KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand
- > Some courses available via Distance Learning. Some distance courses have compulsory contact courses.

## A GOOD FIT IF YOU...

- > Want to work with farmed or companion animals
- > Are interested in solving contemporary New Zealand animal production challenges
- > Enjoy sciences.

### The only animal science degree in New Zealand

Combine your love of animals and science with the only animal science degree available in New Zealand.

### Learn from the best

Massey University's animal, agricultural and veterinary science professionals are among the best in the world. They will teach you about the latest developments in animal science. Majors on offer include genetics and breeding, nutrition and growth, and animal welfare. This degree also offers a speciality in equine science.

### Internationally relevant

This degree is equivalent to international animal science qualifications and as a Massey University animal science student, you will benefit from our internationally recognised capability and leadership in these areas.

### Research-led learning

Massey has a number of internationally recognised animal-based research centres including: AL Rae Genetics Centre, Animal Welfare Science and Bioethics Centre, Centre for Feline Nutrition, Equine Parentage Genetic Services Centre, Equine Research Centre, International Sheep Research Centre, Monogastric Research Centre and the Working Dog Centre.

### Join a world-leading university

Our proud record dates back to 1927 when we offered New Zealand's first degrees in agriculture. Massey University is home to the only animal science team in New Zealand and one of the largest in Australasia.

# Bachelor of Animal Science

## BAnSci

Practical components of the programme are taught on site at our state of the art teaching laboratories, our sheep, beef and dairy farms, and at our feline and canine facilities.

## CAREERS

The Bachelor of Animal Science will provide you the expertise you require for the careers of the future. You will be qualified for technical, advocacy and management roles across the production animal, equine and companion animal science industries. These include:

- > Animal management
- > Technical/managerial roles both domestically and overseas in a wide range of animal and primary production industries
- > Consultancy
- > Animal breeding
- > Animal nutrition and health
- > Sales and technical
- > Laboratory roles in nutrition, meat science and animal health
- > Feed/pet food manufacturing
- > Agricultural biotechnology
- > Biosecurity and customs
- > Animal welfare officers
- > Policy and regulation
- > Disease control
- > Equine sport and racing.



# Animal Genetics and Breeding

## A major of the BAnSci

### KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand
- > Some courses available via Distance Learning. Some distance courses have compulsory contact courses.

### A GOOD FIT IF YOU...

- > Enjoy studying biology and genetics at school
- > Are interested in a career working with animals
- > Want to learn about the selection and breeding of animals.

Learn how animal breeding and genetics can have a positive impact on animal industries and the New Zealand economy. The Bachelor of Animal Science (Animal Genetics and Breeding) is ideal for you if you have an interest in genetics in relation to animals. You will learn:

- > How effective breeding strategies can both improve animal health and be more effective for farming and agriculture
- > About reproductive physiology and reproductive technologies
- > How to set up a genetic improvement programme based on breeding goals
- > How to collect relevant information, analyse it and make decisions to attain those goals.



# Equine Science

## A major of the BAnSci

### KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand
- > Some courses available via Distance Learning. Some distance courses have compulsory contact courses.

### A GOOD FIT IF YOU...

- > Enjoy sciences
- > Are interested in horses and their relationship to humans
- > Would like to work in the equine industry.

The Bachelor of Animal Science (Equine Science) will help you understand nutrition, growth, health and performance in the equine athlete.

The equine industry is large, diverse and economically important both in New Zealand and worldwide. You will be prepared for a wide variety of equine enterprises anywhere in the world.

The Equine Science major will give you knowledge of equine welfare, behaviour and health. You will also gain an understanding of performance nutrition and responses to training of horses. You will acquire a broad understanding of health and production issues, and be able to offer the equine industry up-to-date, scientifically-based knowledge.

# Animal Welfare

## A major of the BAnSci

### KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand
- > Some courses available via Distance Learning. Some distance courses have compulsory contact courses.

### A GOOD FIT IF YOU...

- > Care about the treatment and welfare of animals
- > Want to learn about animal needs and management.

The Animal Welfare major will help you understand the science behind how animals experience their environment. You will also examine what influences that and how that affects their behaviour and performance. You will gain a relevant, up-to-date, scientifically-based knowledge of animal welfare. You will be well-placed to make a difference in the lives of animals.

You will obtain a solid base of knowledge in animal welfare. You'll also learn about nutrition and growth as well as animal genetics and breeding. You will be qualified for technical, advocacy and management roles across different types of industries and animals.



# Animal Nutrition and Growth

## A major of the BAnSci

### KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand
- > Some courses available via Distance Learning. Some distance courses have compulsory contact courses.

### A GOOD FIT IF YOU...

- > Like working with animals
- > Are interested in what diets optimise animal production, performance and health
- > Care about the role of animals in society and in food production.

The Bachelor of Animal Science (Animal Nutrition and Growth) will help you understand how what animals eat affects their growth and health.

The New Zealand meat industry is well recognised around the world for its pasture-raised product. In New Zealand we also have world-leading industries raising poultry and pigs. Nutrition is also extremely important for sport and companion animals. Improving nutrition can optimise the performance of animals in all these industries. You will learn how animals digest food and what feeds are best for them. You will also learn how much they should be eating for the appropriate growth and development, performance and health.



RICS

the mark of  
property  
professionalism  
worldwide

Accredited course

## KEY FACTS

- > Available at Auckland (includes block mode teaching)
- > You can choose to complete part or all of your study via distance mode
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.

## A GOOD FIT IF YOU...

- > Are interested in buildings and their construction process
- > Enjoy exciting, dynamic and ever evolving work environments
- > Want great salary prospects with a wide range of opportunities
- > Want excellent career progression prospects into construction project management and leadership roles.

## A CONSTRUCTION EXPERT

The Bachelor of Construction will help you become a construction expert who can contribute to the critical construction sector needs highly sought-after by employers and internationally recognised.

Studying the Massey University Bachelor of Construction will provide you the ability to develop and implement best practice building solutions and construction management techniques. You will learn how to add value to the sustainable development of the built environment. This qualification will give you sound technical and theoretical knowledge, industry experience, management and interpersonal skills.

### Relevant to industry

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

- > Project management and quantity surveying consultancies
- > Building renovation and earthquake strengthening
- > Construction companies
- > Development consortiums
- > The requirements and processes of local authorities and regulatory bodies
- > Property development or property management
- > Industrial and commercial building services
- > Insurance rebuild costs.

# Bachelor of Construction BConst

### Digital technology is integral

There is an emerging need in the industry for robust technical skills. You will make extensive use of digital technology during your study. Knowledge of digital built environment is embedded within programmes and courses, so students are equipped to contribute to transformation of practice. Digital representation, modeling and video capturing will be an integral part of the preparation and submission of assignments. Core courses for construction will teach you vital digital skills such as: Computer Aided Design (CAD), Building Information Modelling (BIM), and Augmented and Virtual Reality.

### Flexibility

Although you need to choose a major when you enrol, you can change from one major to another before commencement of your second year.

You can choose to complete parts of your study via distance mode, so you can continue to study while gaining valuable work experience.

## MAJORS OR ENDORSEMENTS

- > Construction Management
- > Quantity Surveying.



## CAREERS

The New Zealand construction sector is booming and is in demand of skilled construction experts. Accordingly, the demand for construction and built environment graduates is very strong in the current market environment. There are exciting opportunities available across the sector, and Bachelor of Construction graduates are currently in demand for a range of industry roles.

### Wide range of employment options and opportunities

Quantity surveyors are involved in preparing feasibility studies, budgeting, cost estimates, life-cycle costing, preparing tender and contract documents, contract administration, project payments, cost control, preparing final accounts, and increasingly, assessing embodied carbon. Construction managers are typically involved in many of the activities connected to the physical execution of construction projects. They ensure that projects are delivered on time, within budget, at the right quality whilst also keeping with all health and safety requirements.

Both disciplines are vital to the successful conclusion of exciting projects. They could include new residential and commercial buildings, bridges and motorways, agricultural facilities, or housing estates and the development of waterfront sites. Opportunities exist for graduates across the construction field - in consultancy, within organisations, and as a self-employed contractor.

### ■ STACEY OTENE

Ngāti Ruanui  
Bachelor of Construction  
(Quantity Surveying)  
Graduated in 2019

Quantity Surveyor, Rider Levett Bucknall

During my time at Massey, I found surrounding myself with strong individuals who encouraged me to do my best and succeed.

I became involved in organisations such as Te Waka, Māori@Massey and Pasifika@Massey which help give students the necessary skills to do well during our time at university. These organisations work hard to bring Māori and Pasifika students together to socialise, celebrate our different cultures and study together.

The three years I spent studying at Massey University were challenging. I found the key was asking for help when you needed it as the lecturers were very supportive. The papers I completed at Massey University were essential to being able to navigate the measuring software I use every day in my work. The economic and law papers I studied have also assisted with the processing of payment schedules.

During the last semester of my studies I secured a cadetship with Rider Levett Bucknall and when I completed my degree I was employed as a graduate quantity surveyor. There is a wealth of knowledge at RLB and I try to learn as much as possible from the people I work with. It is incredibly rewarding seeing a finished project that I helped to complete, and I plan to continue to work in the New Zealand construction industry contributing to projects that grow our country's economy.



## KEY FACTS

- > Available at Auckland (Includes block mode teaching) or via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.

## A GOOD FIT IF YOU...

- > Are interested in the construction process and activities
- > Want excellent career opportunities in management and leadership of construction work
- > Want great salary prospects with a wide range of opportunities.

### Manage the buildings of the future

With Massey's Bachelor of Construction (Construction Management) you will be able to make your mark on this growing industry. Many of our students have secured industry roles or even have been accepted into graduate programmes before they have finished the degree. You will learn how to contribute to client needs assessment and how to offer advice on resolving buildability issues at the design stage. You will plan, schedule, and organise for implementation of new builds, refurbishments and conversions. You will learn how to make sure that things stay on track – financially, quality and time-wise and that you are meeting legal requirements.

# Construction Management

## A major of the BConst

You can follow your passion and create your own niche. For instance you may be interested in sustainable construction, or you could be an advocate for energy efficiency and reducing carbon emission of construction processes and built facilities.

### Digital technology is integral to your learning

Extensive use is made of digital technology during your study as it is embedded across most of your courses. You will also engage in interactive online activities and receive digital learning material as part of course delivery. Some assignments will require you to prepare a video of your work. Core courses for construction management will teach you vital digital skills such as: Computer Aided Drawing (CAD), computer modelling of buildings (BIM, Augmented and Virtual Reality).

### Flexibility

You can choose to complete parts of your study in distance mode. This means that you can continue to study while gaining valuable work experience in addition to earning a sizable and competitive market salary.



## KEY FACTS

- > Available at Auckland (Includes block mode teaching) or via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.

## A GOOD FIT IF YOU...

- > Enjoy building systems, economics and estimating quantities of construction work
- > Want to work in dynamic construction project environments
- > Want great salary prospects with a wide range of opportunities.

### Ensure resources are available for project completion

Work on exciting construction projects from start to finish, ensuring they are well managed financially.

You will work on projects from initiation to completion. You will be helping them to stay on track financially. It's a challenging and interesting role where you will be looked to for your problem-solving skills to help the project go to plan.

Massey's Bachelor of Construction (Quantity Surveying) will teach you all the skills you need to be a sought-after quantity surveyor.

# Quantity Surveying

## A major of the BConst

Digital technology is integral to your learning

Extensive use is made of digital technology during your study. It is embedded across most of your courses. You will use cutting edge software for measurement and costing, engage in a range of interactive online activities and Q&A sessions, and receive digital learning material as part of course delivery. Core courses in quantity surveying will teach you vital digital skills such as: Computer Aided Drawing (CAD), computer modelling of buildings (BIM, Augmented and Virtual Reality).

### 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 also choose to complete parts of your study in distance mode. So 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.





## KEY FACTS

- > Some majors available at Auckland
- > Some majors available at Manawātū
- > Equivalent to four years full-time study
- > Available for international students studying in New Zealand.

## A GOOD FIT IF YOU...

- > Enjoy building things and solving problems
- > Are inquisitive and like to know how things work
- > Do well in science subjects.

## Real-world engineering from day one

Start becoming an engineer from day one of your studies at Massey. You will learn the skills to make you a sought-after employee in New Zealand and internationally. Every year you work on projects that help our communities and industry. This gives you a real feel of what engineering involves. It will train you to translate your ideas into real solutions, using all the problem-solving skills and underpinning knowledge that you acquire in the programme. There are several majors available within the degree:

- > Chemical and Bioprocess Engineering
- > Electronics and Computer Engineering
- > Mechatronics.

## Our distinctiveness

Our 'project spine' allows you to develop the skills that real engineers rely on in practice. You will work in teams to solve real-world problems and develop the skills that distinguish you from the rest.

## Practical experience

We want you to have a competitive edge. During your degree you spend 800 hours (approximately 5 months) working as engineers with companies. That helps you to come out with a broader understanding of the industry and some great experiences for your CV. You will be ready to start work and be productive from the day you graduate.

## Engineering is a great career choice

Worldwide, engineering is recognised as a vital sector in the global economic performance. More and more graduates are needed to solve the problems challenging humanity.

# Bachelor of Engineering with Honours BE(Hons)

## Career progression

You may find that your early employment is in the design and development of technical projects for industry. However, within five years you may well have moved into management in technical, research and development, production, or quality assurance roles. You could then move to general management, or even choose to start your own businesses.

Massey's BE(Hons) assists the transition into the business side of engineering, with a focus on business skills as part of the degree. You could also undertake postgraduate degrees after completing a BE(Hons), then work in the research and development sector. Massey graduates are sought after by employers for their ability to be highly productive employees from day one. Massey provides first-rate support to help you hit the ground running – You will stand out from the rest. With the BE(Hons) you can work around the world.

## ENTRY REQUIREMENTS

For up to date information on entry requirements, see [massey.ac.nz/study/entry-requirements-to-study-at-massey/](https://massey.ac.nz/study/entry-requirements-to-study-at-massey/)

## CAREERS

Our graduates can work in many industries as:

- > Consultants
- > Marketing and sales engineers
- > Process automation and manufacturing engineers
- > Product design and development engineers
- > Project planners / managers
- > Research engineers
- > Robotics and industrial automation engineers
- > Software/hardware engineers
- > Systems test and quality assurance engineers.



## KEY FACTS

- > Available at Manawatū
- > Prescribed four year programme of full-time study
- > Available for international students studying in New Zealand.

# Chemical and Bioprocess Engineering

## A major of the BE(Hons)



## A GOOD FIT IF YOU...

- > Have keen interest in science and discovery
- > Want to learn how to design and implement chemical and bioprocess plants
- > Want to innovate processing techniques for a sustainable world.

### Meeting world demand

World economies are strongly based on adding value to raw materials through processing, so engineers who specialise in this area are in demand.

Chemical and bioprocess engineering is the industrial processing of raw materials to higher value products through combinations of physical, chemical or biochemical action. These processes can be very diverse. Chemical and bioprocess engineers design, optimise and operate these processes. Examples include:

- > Production of pharmaceutical products
- > Extraction of high value compounds
- > Composting of organic waste
- > Conversion of milk solids to dairy ingredients
- > Conversion of wood into paper
- > Fermentation of sugars to alcohol
- > Production of fuels from waste streams.

### A focus on innovative approaches

The Bachelor of Engineering with Honours (Chemical and Bioprocess Engineering) will equip you with core chemical engineering skills for more traditional industries (oil, gas). But there is also a focus on innovative approaches such as nanotechnologies, biocatalysts, and clean processing techniques.

The first year of study builds a solid platform of science principles with an engineering context, in common with the other engineering majors.

In the second year you will build further on these fundamental sciences. You will also learn about their application to chemical and bioprocess engineering systems.

In your third year, your study will extend from the study of engineering and chemical principles to processing applications. These may include bio-separations and reactor technologies.

In the fourth year, you will design a major innovative production process to integrate the various engineering and science skills you've learned in earlier years of study.

### Follow your interests

You can focus on particular processing industry sectors such as biotechnology, chemical processing, environmental engineering and renewable energy.

## CAREERS

You can be involved in the design of a whole process, help optimise existing processes or operate the process itself. Graduates also work in a diverse range of industries including chemical processing, biotechnology, pharmaceuticals, pulp and paper, dairy, meat and food processing, and environmental engineering. Jobs can include process engineers, waste water engineers, energy development engineers and many others.

## KEY FACTS

- > Available at Auckland
- > Prescribed four year programme of full-time study
- > Available for international students studying in New Zealand.

# Electronics and Computer Engineering

## A major of the BE(Hons)

### A GOOD FIT IF YOU...

- > Are fascinated by how things are designed and programmed
- > Are interested in electronics, computers and communications
- > Want to learn how to design and implement advanced electronic devices and systems.

### Play a key role in making technology

Studying toward the Bachelor of Engineering with Honours (Electronics and Computer Engineering) will help you play a key role in the design and manufacture of electronic and computer systems for industrial and every day applications.

The programme will help you become an excellent electronic and computer engineer. You will be multi-disciplinary, have excellent practical skills and be able to design, develop and manage both software and hardware projects. You will be capable of working in a team environment and solving problems from the device level to networks, communication systems and embedded systems.

Virtually every aspect of our lives involves electronic and computer technology. Computers and smart phones are obvious examples of electronics and computers in modern day life, but many of the electronics and computer systems we rely on are hidden from view.

A feature of the engineering programme at Massey is that much of our teaching is based in the laboratory – You will get real hands-on practice. There is also a strong emphasis on embedding computing and electronics technologies in every-day consumer products and the importance of the user interface.



### BE SOUGHT AFTER BY EMPLOYERS

You will gain a broad range of skills and practice as well as strong analytical and critical thinking skills. Massey engineering graduates are sought-after by employers for their ability to be valuable employees from day one, in areas like:

- > Electronic engineering
- > Systems management/programming/analysis
- > All software sectors
- > Information technology sectors, from research and development to service.

### CAREERS

As an electronics and computer engineering graduate you will be as much at home designing an electronic or embedded hardware system as working on a large-scale distributed software application. Careers may include senior specialist positions and a variety of management positions, such as:

- > General management
- > Programming manager
- > Project leader
- > Systems manager.

## KEY FACTS

- > Available at Auckland
- > Available at Manawatū
- > Prescribed four year programme of full-time study
- > Available for international students studying in New Zealand.

# Mechatronics

## A major of the BE(Hons)

### A GOOD FIT IF YOU...

- > Are interested in robotics and automation
- > Want to work with a wide range of different technologies
- > Want to have an impact on society.

### Become a problem solver

A Massey University Bachelor of Engineering with Honours (Mechatronics) equips you with the knowledge and skills you will need to develop your own mechatronic systems. These skills will help you develop effective solutions to the problems you will face in industry.

The major strikes a balance between a broad engineering education and practical abilities.

### Multi-disciplinary

The mechatronics major at Massey University is a practical, multi-disciplinary major. It teaches you about mechanics, electronics, software, and control. It emphasises the importance of a coherent and concurrent design process when developing a system.

### Access to workshop equipment

Massey University has several fully-equipped workshops. You will learn to use various tools during the course of your studies. For example:

- > 3-D printers
- > Laser cutters
- > Lathes
- > Mills
- > Advanced electronic instruments.



### Taught by world-class experts

Mechatronics staff are personable, welcoming, and approachable. Our open-door policy means you will have ready access to world-class experts on mechatronics, robotics, automation, AI, and materials-based research.

More than one quarter of the Bachelor of Engineering (Honours) programme is project-based. These projects will give you the skills to design, build, and integrate mechanical, electrical and software systems from the ground up. Project work typically includes:

- > Building machines for automation
- > Programming
- > Designing and building electrical circuits and systems.





## KEY FACTS

- > One major available at Auckland
- > Both majors available at Manawātū
- > Equivalent to four years of full-time study
- > Available for international students studying in New Zealand.

## A GOOD FIT IF YOU...

- > Want a career in the New Zealand or international food and beverage industry
- > Enjoy sciences and are interested in engineering
- > Want to know about the technology used to make food.

## MAJORS

The study of food technology is science and engineering-based. It combines fundamental sciences, mathematics and chemistry – and the more applied sciences and engineering – with business and management. There are two majors in the Bachelor of Food Technology with Honours degree, which is ranked 75 in the 2022 Shanghai Rankings.

### Food Product Technology

You will learn how to lead and manage food product development from idea generation to product launch.

### Food Process Engineering

You will focus on engineering principles, learning how to design processes and use technology to create effective food production systems.

### Move straight into work

At the end of the four-year programme, you will be able to move directly into key roles in the food industry such as product development, process improvement or food engineering

### Work on real-world 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 in the classroom, but practical laboratory and workshop sessions that focus on real industry problems and solutions.

# Bachelor of Food Technology with Honours

## BFoodTech(Hons)

Although you do need to choose one of these majors at enrolment, you can change your major as you learn more about the food industry during your study.

## CAREERS

When you graduate with your Bachelor of Food Technology with Honours you will find there is a wide range of employment opportunities in New Zealand and around the world.

Career progression in the food industry can be rapid. You may start out in your career in a technical role - often the stepping stone to senior management and leadership positions in the industry, or you could set up your own business. You could also undertake postgraduate degrees after completing a BFoodTech(Hons), then work in the research and development sector. There are many potential roles.

- > Food technologist: researching new foods and drinks and developing new products, packaging or processes.
- > Product development technologist: specifically working on developing a new product from concept to production.
- > Process technologist: installing, improving and fixing food production processes.
- > Process engineer: developing new technology for new products or to make food production processes better.
- > Flavour technologist - developing new flavour and texture innovations.
- > Packaging technologist: developing more efficient and sustainable food packaging.

### Others include:

- > Quality manager
- > Food safety manager
- > Production team leader
- > Technical sales and support
- > Winemaker or brewer
- > Food microbiologist
- > Food chemist.



### Sought-after by employers

With your Bachelor of Food Technology with Honours from Massey University, 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.

### An internationally-recognised food technology programme

Both majors of the BFoodTech(Hons) programme are accredited by the US-based Institute of Food Technologists (IFT). It is one of only a handful of qualifications outside the Americas to have achieved this recognition.

The Food Product Technology major is also accredited by Engineering New Zealand as a professional engineering degree under the Sydney Accord, an international agreement (equivalent to a three-year engineering degree).

The Food Process Engineering major also has accreditation by Engineering New Zealand as a professional engineering degree under the Washington Accord, an international agreement (equivalent 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 800 hours of approved summer vacation employment (over two summer breaks). This is more than other food qualifications in New Zealand and means that you will come out with a broad understanding of the food industry,

great references for your CV, and you will be ready to start work from the day you graduate.

In your first year you will be given the engineering and food technology skills to succeed in your programme while at the same time working on a food technology project. At the end of the semester students will show case their products at an exhibition. First-year students will also take an introductory course on science and sustainability - key concepts for the future.

## ENTRY REQUIREMENTS

Only University Entrance (UE) is required to be admitted to the programme. There are no specific entry requirements for this programme, but to be successful in your studies we recommend that you have the following:

### NCEA

- > Mathematics: At least 16 NCEA Level 3 credits in mathematics, normally including two of the following standards: AS91577 (Algebra), AS91578 (Differentiation), or AS91579 (Integration)
- > Physics: At least 16 NCEA Level 3 credits
- > Chemistry: At least 14 NCEA level 3 credits.

### Cambridge International Examinations: A Level

- > Mathematics: C Grade
- > Physics: C Grade
- > Chemistry: C Grade.

### International Baccalaureate: 29 points

- > Mathematics: 5 points Higher Level
- > Physics: 5 points Higher Level
- > Chemistry 5 points Higher Level.





## KEY FACTS

- > Available at Manawatū
- > Equivalent to four years of full-time study
- > Available for international students studying in New Zealand.

# Food Process Engineering

## A major of the BFoodTech(Hons)

### Join a growing industry

The world's growing population needs healthy and safe foods and New Zealand is an important link in the global food supply chain to meet this demand. That population needs healthy and safe food products and ingredients manufactured on a large scale. Development of new food products pose challenging and exciting process design problems that you can help solve.

### A GOOD FIT IF YOU:

- > Think methodically and enjoy research
- > Are interested in how raw agricultural products are transformed into healthy and exciting food products.

Every day new food products and food ingredients are developed. The large-scale food manufacturing processes needed to bring these safely and sustainably to the world are designed and managed by food engineers. With the Massey University food process engineering major, you will have the skills and knowledge to work in and to eventually lead this exciting global industry.

### Global opportunities

You could go on to manage the development and installation of new processing lines and factories producing products meeting the customer requirements in a safe, economical and sustainable way. You could also turn your great ideas into new innovative solutions. These could then be developed into a business. The possibilities are endless, and your skills can be applied all over the world.

## KEY FACTS

- > Available at Auckland and Manawatū
- > Equivalent to four years of full-time study
- > Available for international students studying in New Zealand.

# Food Product Technology

## A major of the BFoodTech(Hons)

### A GOOD FIT IF YOU...

- > Are interested in creating new food products
- > Wish to learn how to bring new food products to market
- > Are interested in being a leader in the food industry.

Every day new food products and food ingredients are developed. Consumers are looking for new healthy and safe food products, using sustainable ingredients. The large-scale food manufacturing processes needed to bring these products safely and sustainably to the world are designed and managed by food technologists. With the Massey University food product technology major, you will have the skills and knowledge to work in and to eventually lead this exciting global industry.

### Global opportunities

You could go on to manage the research and development of new food products or ingredients, producing products meeting the customer requirements of taste and nutrition, in a safe, economical and sustainable way. Like the Food Process Engineering major, the possibilities are endless and your skills can be applied globally.



## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning. Some distance courses are not offered every year, and some distance courses have compulsory contact workshops
- > Equivalent to three years of full-time study
- > Available to international students studying in New Zealand.

## A GOOD FIT IF YOU...

- > Enjoy applied sciences
- > Are interested in a career in horticulture and have a passion for plants and people
- > Want to feed the world fresh, healthy, sustainable food.

### A unique degree focused on horticulture

The Bachelor of Horticultural Science is focused on helping you become a horticulture graduate who can hit the ground running. It will give you the relevant, contemporary skills that industry seek.

### In demand by employers

Globally there are more jobs in horticulture than there are people to fill them. In Aotearoa New Zealand, the apple industry alone estimates that they need 150 graduates each year for the next decade. Horticulture will offer you a wide range of exciting and rewarding career opportunities across business and science roles.

### Future-focused and industry-led

This qualification will give you an understanding of the breadth of horticulture. This includes everything from the genetics of plants to plant growth, the production of food, agribusiness, the influence of government policies, regulations and Te Tiriti o Waitangi (Treaty of Waitangi). You will learn how products are marketed and sold, and how to understand what consumers want in international markets.

### Experience before you graduate

Industry experience is integrated into this degree, with practical work courses allowing you to experience and analyse real-world scenarios while you are studying. You will gain a huge amount of practical experience. As part of this programme, You will need to do at least 26 weeks of full-time work in horticulture. This is usually done during the summer when work is readily available in orchards and horticulture processing businesses.

# Bachelor of Horticultural Science

## BHortSci

There are opportunities to attend field trips, multi-day study tours around New Zealand and even international study tours to see world-leading horticultural operations and research. Through your coursework there are also plenty of other practical applications and real-world experiences including guest lecturers from industry.

## WHAT TO EXPECT

One of the best things about this degree is the variety of study. You will learn about plant biology and soils, and be introduced to production horticulture, agribusiness and agri-related analytics and statistics.

## CAREERS

After completing your qualification, you will be prepared for a wide range of technical and management positions, in New Zealand and internationally. Some areas of employment include:

- > Horticulture science consultant
- > Orchard and greenhouse production management
- > Crop disease and pest control
- > Technology, innovation and robotics
- > Post-harvest management
- > Biosecurity
- > Organic production
- > Perishable supply chain management
- > International trade, access, and marketing
- > Policy, regulation and advocacy.

## SCHOLARSHIPS

There are many scholarships available for students who are studying in the areas of agriculture and horticulture. Many major New Zealand agricultural organisations provide scholarships for Massey students.

Accredited by:



## KEY FACTS

- > Available at Auckland
- > Most majors Available at Manawātū
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international Students studying in New Zealand or via distance learning.

## A GOOD FIT IF YOU...

- > Think logically and analytically
- > Are interested in learning technical and applied skills
- > Look forward to a challenging and rewarding career in the software industry.

### Top careers in software design and development

Exciting challenges and careers are available in software development, business analysis, project management. Massey provides you with the technical skills and knowledge to take your place in the fastest growing industry in the world. Link with industry while you study. Massey is the only university in New Zealand specialising in the C and C++ programming languages that are highly sought-after by employers. You will also learn Java, Python, SQL and other languages.

Massey is the only university in New Zealand to offer five ICT-related majors in the same degree. This allows you to mix and match courses to suit your strengths and interests. Include a double major or a minor (in any subject) or New Zealand's only minor in Games Programming.

Massey teaches students the skills and knowledge needed to succeed in the software industry. Topics include:

- > Mobile applications
- > Graphics and games programming
- > Networks and security
- > Web development and internet programming
- > Artificial intelligence
- > Machine learning and data wrangling.

There is a huge demand around the world for people with information and communication technology skills. Massey's Bachelor of Information Sciences will give you the skills needed to make you a sought after employee, both in New Zealand, and internationally.

# Bachelor of Information Sciences

## BInfSc

You may be thinking about studying in this area, but are not sure what major to choose. At Massey you have the flexibility to change your major right up to the commencement of your second year. So you can complete the first year of study, and once you've experienced the different subjects, make up your mind after that.

You can start your degree at the beginning of the year, or in Semester Two (starting July), but this may mean that you will need more than three years to complete the qualification. Once you graduate you can move on to advanced study in the Postgraduate Diploma or Master of Information Sciences.

## ENTRY REQUIREMENTS

To enrol in the Bachelor of Information Sciences programme you must qualify for undergraduate admission, either through Bursaries and Scholarship Examinations, NCEA Level 3, New Zealand University Entrance, Admission with Equivalent Status, Discretionary Entrance or Adult Admission.

Students with excellent achievements in NCEA and prior programming experience through the successful completion of courses and participation in competitions like STAR, NCSS or the ACM SPPC will be considered for direct entry into second-year Computer Science courses.

## CAREERS

There is huge demand for people with information sciences skills. Massey Bachelor of Information Sciences graduates continued to find employment even during global recessions when graduates in other fields struggled.

Today, there are more employment opportunities in information communication technology (ICT) than any other sector in New Zealand. The same often applies internationally.

## KEY FACTS

- > Available at Auckland
- > Available at Manawatū
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international Students studying in New Zealand or via distance learning.

# Computer Science

## A major of the BInfSc



## A GOOD FIT IF YOU...

- > Would like to develop new software applications
- > Enjoy breaking a complex problem down into its constituent parts
- > Are interested in topics such as graphics, games, artificial intelligence and programming.

### Degree Programme

The Computer Science Major can be taken in either the BInfSc or the BSc. Students should select the BSc if they want to study Computer Science alongside another science major such as Mathematics or Statistics. Students who want to work in the ICT industry should enrol in the BInfSc.

### Challenging careers in software development

Massey provides you with the technical skills and knowledge to take your place in the fastest growing industry in the world. Link with industry while you study to get a head start in software development.

Massey's Bachelor of Information Sciences (Computer Science) will give you the applied skills and knowledge to become a sought after ICT professional, able to take on a wide variety of roles in the software industry.

### Applied and technical knowledge

Massey teaches students the applied skills and knowledge needed to succeed. Massey is the only university in New Zealand specialising in the C and C++ programming languages that are highly sought after by employers. You will also learn Java, Python, SQL and other languages. Every computer science course includes practical assignments.

### What you will learn

The computer science major focuses on hardware, software, algorithms and programming. You will learn how computer systems work and how to create efficient algorithms to solve challenging problems. You will learn several programming languages and gain the skills and experience to confidently start a career in software development. Topics on offer include:

- > Data structures and algorithms
- > Embedded programming
- > Object-oriented programming
- > Computer graphics
- > Games programming
- > Machine learning
- > Concurrent programming
- > Web applications
- > Computer networking
- > Mobile applications.

## KEY FACTS

- > Available at Auckland
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.

# Data Science

## A major of the BInfSc

### A GOOD FIT IF YOU...

- > Are curious, love problem solving and making discoveries
- > Want to be on the cutting-edge of artificial intelligence innovations shaping the world
- > Want a dynamic and stimulating career for life.

This major will enable you to become a hi-tech data specialist with the relevant skills to take you to the forefront of this fast-paced industry.

The Bachelor of Information Sciences (Data Science) gives you the skills to fill the rapidly growing number of jobs in the area of data science and analytics.

You will learn how to make sense of complexities so others can understand them and how to apply computing to data-oriented challenges. You may have an interest in commerce, government, natural and social sciences. You can learn how to apply technology to drive potentially world-changing innovation, decision-making and research in those fields. You will learn how to edit and develop relevant code in Python.

Data Science brings together some of the most interesting aspects of computer science, IT and statistics in order to make a unique, custom-designed and relevant specialisation for the current job market.



### A shortage waiting to be filled

LinkedIn's Jobs On The Rise 2022 lists Machine Learning Engineer in the top five fastest-growing professions - the Data Science major is in this area. Data scientists are in high demand because they:

- > Innovate new products
- > Drive greater efficiency in profitability in competitive environments
- > Enable management to make better decisions.

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.

### A career with variety

Some examples of careers that could lead on from this qualification include:

- > Data science engineer
- > Hadoop big-data 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.

## KEY FACTS

- > Available at Auckland
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via distance learning.

# Information Systems

## A major of the BInfSc



## A GOOD FIT IF YOU...

- > Want a career in today's technology driven enterprises
- > Would like to find out more about business and systems analysis
- > Want to develop skills in IT project management.

### Learn how technology and enterprise connect

Combine your interest in business and entrepreneurship with an understanding of how information systems are a vital part of organisations. Learn how to manage knowledge, effectively use social media in your business and how to manage IT projects.

If you are interested in IT but prefer working with people and establishing client requirements then the Bachelor of Information Science (Information Systems) is the right choice for you.

### Information systems are everywhere

All around us, information systems are increasingly connected and automated. More and more data is being created daily ('Big Data'). This changes the way that businesses and organisations process and apply information about their products. It also affects how they interact with services and customers. Such systems are not only about technology. Their success depends on their designers having an understanding of computer software and they also need to understand the social, human and organisational contexts of these systems.

### Understand technology and its users

When you study information systems you will learn the essential soft skills of working with the users of IT systems. You will learn to understand their needs and how systems can be designed to meet them. You will understand the impact of ICT and how information

systems are part of the strategy of any organisation. You will learn about computer systems from the perspective of the system developer as well as the manager, the administrator and the entrepreneur.

Our Information Systems major will combine your interest in organisations and entrepreneurship with an understanding of how information systems drive the contemporary enterprise. This is in contrast to computer science and information technology that stress the underlying technologies.

## CAREERS

Knowing the potential of information systems and having the ability to put this knowledge to work results in a successful personal career, organisations that reach their goals and a high quality of life. The Information Systems major is well-suited to those interested in a career in management or administration in a technical environment. Some examples of professional careers that follow on from this major include:

- > Business and systems analysts
- > User support specialists
- > Database administrators
- > Software testing
- > Software quality assurance
- > Project managers
- > Independent consultants.

There are a huge number of job opportunities in this area worldwide. Check out New Zealand's popular job-seeking sites to see what's available in Aotearoa at any given time.

## KEY FACTS

- > Available at Auckland and Manawatū
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international Students studying in New Zealand or via distance learning.

# Information Technology

## A major of the BInfSc

### A GOOD FIT IF YOU...

- > Like designing and building technology solutions
- > Like helping people use technology to solve real-world problems
- > Like working with people and technology.

### Sought-after by employers

The Bachelor of Information Sciences information technology major will combine your love of problem-solving, teamwork and technology with the core skills needed to analyse, design, build and manage a huge range of IT systems, projects and resources.

Our personal lives are becoming ever more entwined in social networks, virtual worlds and gaming environments. While commerce and industry are increasingly dependent on new and improved information technology.

### Meet the needs of future consumers

When you study the Bachelor of Information Sciences (Information Technology), you will examine the huge range of technology that we use. You will gain skills in designing and building systems that will meet the needs of consumers today and in the future.

### In demand

IT employers are constantly seeking skilled staff. High demand areas include software development, software testing, business analysis, network security, project management and data/database.

### What will I learn?

You will gain skills in:

- > The analysis, design and deployment of complex information technologies
- > The use of professional software tools, and the administrative and organisational aspects of IT
- > How to work in a team in the IT environment
- > Topics such as computer security, internet features, user interface design and more.

Information technology can also be taken together with the major in computer science (double major), or another minor of your choice.

### CAREERS

Knowing the potential of information technology and having the ability to put this knowledge to work can result in a successful personal career, organisations that reach their goals, and a higher quality of life.

Information technology graduates command some of the highest salaries of any career. There is a strong demand for qualified ICT professionals, both in New Zealand and overseas. The skills you learn at Massey University and the qualification you will receive are recognised throughout the world. Careers of previous graduates include:

- |                                  |                       |
|----------------------------------|-----------------------|
| > Business and systems analysts  | > Data administrators |
| > User experience (UX) designers | > Application testers |
| > User support specialists       | > Trainers            |
| > Cybersecurity experts          | > Web developers      |
|                                  | > Team leaders        |
|                                  | > Project managers.   |

## KEY FACTS

- > Available at Auckland and Manawātū
- > Available via Distance Learning (subject to planning advice)
- > Equivalent to three years of full-time study
- > Available for international Students studying in New Zealand or via distance learning.

# Software Engineering

## A major of the BInfSc



## A GOOD FIT IF YOU...

- > Are interested in the 'big picture' of software development
- > Are interested in both computer science and information technology
- > Are interested in the development of major software applications (such as web, apps, games and the Internet of Things).

### The best of both worlds

Software engineering brings together the disciplines of computer science and information technology. The Massey Bachelor of Information Sciences (Software Engineering) gives you a highly-practical and sought after qualification that is practice-focused and industry-relevant.

Studying software engineering will see you gain the knowledge, tools and practical skills to be able to design, construct, test and maintain large software applications.

The Bachelor of Information Sciences (Software Engineering) is a joint major which means that you will study aspects of both computer science and information technology.

### Your learning will focus on:

- > The design and construction of large software applications
- > Both soft and hard software development skills
- > The technical knowledge of computer programming from computer science combined with the design and team skills of information technology.

### In demand

Employers are always seeking increasing numbers of staff. Look at the SEEK website to see the demand for ICT professionals in New Zealand. The majority of the hiring is taking place because of increased demand and new projects.

Software engineering is a high demand area, including jobs for developers, architects, software testers, user requirement specialists and business analysts. As well as network security, project management and data/databases.

Software engineers are in high demand throughout the world, which means there are plenty of jobs out there for hard working graduates.

### Create real applications, while you study

An exciting part of the joint major is the team project in the third year, when you will work together with other students to create a new application.





## KEY FACTS

- > Availability: See the chart on page 33
- > Equivalent to three years of full-time study
- > Available for international Students studying in New Zealand (or via distance learning in some cases).

## A GOOD FIT IF YOU...

- > Like making discoveries
- > Seek a career that allows you to contribute to advances in science.

### Make a difference with an exciting and challenging career

Massey's Bachelor of Science (BSc) is a flexible programme that will challenge you, while giving you the satisfaction of discovery.

With Massey University's Bachelor of Science, you will gain a broad scientific education while also being able to study one or more specialist areas in depth.

Leaders and influential thinkers around the world see the training, nurturing and appointment of well-qualified scientists and technologists as instrumental to health, environmental sustainability, and prosperity. Studying science will set you up to play a part in an exciting and prosperous future.

### A flexible programme of study

Massey's Bachelor of Science degree provides you with an adaptable base from which to develop in your chosen career. With the right choice of first-year courses, you can keep your options open and change your major in your second year if you wish to. You can select from a wide variety of majors and minors.

### Get the skills employers are looking for

You will learn concepts, principles and theories that you can apply in your chosen career, such as how to interpret, summarise, evaluate and present data and information, and how to solve problems.

In addition to the technical skills you will gain through practical experience, you will also develop the communication and quantitative skills that are essential to success in New Zealand and international workplaces. These include time management, technological knowledge and project-planning skills that are

# Bachelor of Science

## BSc

useful across a wide range of industries and science-related organisations.

### Learn from the best

Learn from some of the top science researchers and teachers in the world, and use some of the best facilities in New Zealand.

## ENTRY REQUIREMENTS

All students must have a university entrance qualification. A Year 13 background in a number of the Science subjects (Biology, Chemistry and Physics) and at least one of the Mathematics subjects is very desirable - see details on page 03. If you missed out on any of these subjects, you may be able to take courses during Massey's Summer School or Semester Two. There are introductory courses for chemistry, biology, physics and mathematics. "Am I ready for study?" on page 04 for more information.

## PLANNING

Full-time students usually take 120 credits each year, 60 credits per semester. Students will normally begin their study with 100-level, (ie. xxx.1xx) and progress to 200-level courses in Year 2 and 300-level courses in Year 3. For each of the courses you choose, you will also need to check any prerequisites, corequisites or restrictions that apply. In your first year of study for this degree you should take a course in each of mathematics and statistics, and the science and sustainability course, plus at least three other 100-level courses from the BSc schedule. Ensure you take the 100-level courses required as prerequisites for the courses you wish to take at 200-level. Check the **Courses and Planning web page** for your major for details of the courses required. If you take the 100-level majoring requirements of several majors and minors in your first year, this will give you the opportunity to study those subjects in later years. At the end of your first year, you should be in a position to make a well-reasoned confirmation of choice of major and minor. Note that some majors require two 100-level courses in the subject.

# Majors

	Desirable NCEA subjects						Majors available		
	Biology	Chemistry	Geography	Maths/Statistics	Physics		Auckland	Manawatu	Distance
Chemistry		✓		✓		✓ Major and minor available		✓	
Computer Science				✓		○ Minor only	✓	✓	✓
Earth Science		✓	✓	✓				✓	✓
Ecology and Conservation	✓	✓		✓			✓	✓	
Environmental Science	✓	✓		✓				✓	✓
Exercise and Sport Science	✓	✓		✓	✓		✓	○	
Human Nutrition	✓	✓		✓			✓		
Mathematics				✓			✓	✓	✓
Microbiology	✓	✓		✓				✓	
Molecular Cell Biology	✓	✓		✓			✓	✓	
Physiology	✓	✓		✓	✓		✓	○	
Plant Science	✓	✓		✓				✓	
Psychology	✓			✓			✓	✓	✓
Statistics				✓			○	✓	✓
Zoology	✓			✓			✓	✓	



## KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# Chemistry

## A major of the BSc

### A GOOD FIT IF YOU...

- > Enjoy the challenge of problem solving and have an analytical mind
- > Are curious about the fundamental nature of matter and the world around you
- > Enjoy experimental science, chemical reactions and synthesis.

A chemistry degree gives you sought after scientific, analytic and problem-solving skills. This is an exciting and challenging time for chemistry. Solutions to global challenges such as sustainability, energy supply and health and medicine will all require new materials and molecules. These will be developed by chemists.

The study of chemistry is fun and interesting and the topics you will cover are stimulating and relevant. Your lecturers are passionate, engaging and internationally recognised researchers.

### Learn the fundamentals and their applications

The Bachelor of Science (Chemistry) at Massey University will provide you with a foundation in chemistry's fundamental principles. You will learn theories of structure of molecules and materials and how structure determines their properties and reactivities. You will learn the principles of synthetic chemistry and how to design new molecules. In the laboratory you will synthesise new compounds and learn current analytical methods.

The fundamental principles are applied to modern research and applications in chemical biology, chemical synthesis and materials/nanoscience at our Manawatū campus. You will discuss how the fundamental principles are applied to issues such as green chemistry, production of solar fuels, solar energy conversion, new drug development and biologically inspired materials.

You will develop critical thinking skills which, combined with analytical and problem-solving skills and your understanding of the principles of chemistry will allow you to make valuable contributions to public debates.



In your second and third year of study topics in your chemistry courses include:

- > The properties of soft materials, organic materials and bioinorganic materials
- > The theoretical basis for why and how chemical reactions occur
- > Chemical analysis using fluorescence spectroscopy, radiochemistry and forensic methods
- > Science communication skills such as blogging, podcasting and infographics
- > Determining the structures of molecules and materials using NMR spectroscopy, X-ray diffraction methods and mass spectrometry

### State-of-the-art equipment

You will receive training and learn techniques for instruments.

These include:

- |                                       |  |
|---------------------------------------|--|
| > Molecular analysis                  | > Mass spectrometry                            |
| > X-ray crystallography               | > Ultra high performance liquid chromatography |
| > Nuclear magnetic resonance          | > Gas absorption and membrane testing.         |
| > FTIR                                |  |
| > Raman and fluorescence spectroscopy |  |

## CAREERS

Over 200 different companies in New Zealand employ chemical scientists. Employment opportunities range from research and development roles, to technical laboratory (and laboratory manager) roles, to governmental and regulatory policy development, teaching and more. Increasingly, entrepreneurial opportunities for chemists exist with the rapidly expanding number of New Zealand scientific start-up companies. Recent chemistry graduates have been employed as brew production managers, analysts in water quality testing laboratories, policy advisors with the New Zealand Government, and as high school chemistry teachers.

## KEY FACTS

- > Available at Auckland and Manawātū
- > Available via Distance Learning
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via distance learning.

# Computer Science

## A major of the BSc



## A GOOD FIT IF YOU...

- > Would like to develop new software applications
- > Enjoy breaking a complex problem down into its constituent parts
- > Are interested in topics such as graphics, games, artificial intelligence and programming.

### Degree Programme

The Computer Science Major can be taken in either the BInfSc or the BSc. Students should select the BSc if they want to study Computer Science alongside another science major such as Mathematics or Statistics. Students who want to work in the ICT industry should enrol in the BInfSc.

### Applied and technical knowledge

Massey teaches students the applied skills and knowledge needed to succeed. Massey is the only university in New Zealand specialising in the C and C++ programming languages that are highly sought after by employers. You'll also learn Java, Python, SQL and other languages. Every computer science course includes practical assignments.

### Join the real world of software development

Massey has close ties with the innovative and rapidly expanding software companies based in North Auckland. These companies offer opportunities for internships, industry projects, holiday work and possible employment offers. You'll also be involved in creating websites and applications for charities and voluntary organisations.

### What you will learn

The Computer Science major focuses on hardware, software, algorithms and programming. You will learn how computer systems work and how to create efficient algorithms to solve challenging problems. You will learn several programming languages and gain the skills and experience to confidently start a career in software development.

Topics on offer include:

- > Data structures and algorithms
- > Embedded programming
- > Object-oriented programming
- > Computer graphics
- > Games programming
- > Machine learning
- > Concurrent programming
- > Web applications
- > Computer networking
- > Mobile applications.

## KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.\*
- \* requires participation in some fieldwork in NZ

# Earth Science

## A major of the BSc



## A GOOD FIT IF YOU...

- > Are fascinated by our planet, its volcanoes and earthquakes and space science
- > Want to make a contribution to science and a difference to people and our environment
- > Enjoyed the sciences at school.

### Understanding Earth systems and tackling environmental problems

The increasing human population is placing global biodiversity under immense pressure. Ecologists and conservation managers are urgently needed to help guide us into a sustainable future. Massey's Bachelor of Science (Earth Science) will take you on a journey of understanding the processes that moulded our planet. From observing our landscapes from space to finding solutions to our natural hazards and exploring our geology, it is a huge area to cover, leading to fascinating and varied careers.

### Understand how the Earth works

You will develop an appreciation of our whenua. You will graduate with cutting-edge skills and the ability to predict future changes in the Earth's surface such as natural disasters, climate change, te ao turoa and water contamination.

Earth scientists are discovering hydrocarbon and mineral resources. They are establishing policy in resource management, environmental protection, public health, safety, and welfare.

### World-leading in Earth science and volcanology

Massey University is one of the few places in the world with a research group that examines the combination of new technologies (satellites, drones etc.) and computer modelling to answer questions from our communities. We are at the forefront of providing solutions to make our communities safe in the face of natural hazards as well as applying new remote sensing and GIS technologies to environmental management.

Massey has a focus on finding innovative solutions to environmental issues and exploring matauranga Māori. You will get an insight into the connections between geology and the environment.

Massey is the number one place to study Earth Science if you are interested in volcanoes. We have many internationally renowned volcanology experts. You will get to explore this exciting and life-saving area through field trips to volcanoes in the Central North Island. We also have unique equipment that mimics volcanic ash flow.

## TOPICS

Advanced Earth science topics include:

- > Field work
- > GIS (Geographic Information System) software
- > Natural Hazards
- > New Zealand's Earth material
- > Paleoenvironments and climate change
- > Remote sensing
- > Volcanology.

## CAREERS

Massey University Earth Science graduates are employed in many varied positions around the world, including in:

- > Crown Research Institutes
- > Regional councils (land and water resources)
- > Teaching
- > Emergency Management
- > Resource management
- > Hazards research
- > Land rehabilitation
- > Engineering geology.

If you are interested in a research career, Massey's BSc will allow you to choose from a wide range of specialist postgraduate qualifications throughout New Zealand and overseas.

Research scientists have specialised in geochemistry, volcanology, phytoremediation (using plants to remove pollutants from soils), groundwater, natural hazards, computational simulations of hazards, satellite remote sensing and spatial science.

## KEY FACTS

- > Available at Auckland
- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# Ecology and Conservation

## A major of the BSc

### A GOOD FIT IF YOU...

- > Enjoy biology and want to help conserve and manage species and ecosystems
- > Would like to work outdoors with animals or plants, in Aotearoa or beyond
- > Feel inspired to find solutions to the global biodiversity crisis.

### Open up the world

From molecules to forests, ecology and conservation 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. By studying Ecology and Conservation you will discover how to make sense of that information.

The Bachelor of Science (Ecology and Conservation) at Massey University is your start to a meaningful career spent discovering and shaping the interactions between species on our planet.

- > Our ecology and conservation staff are world-leading and by studying with them you will learn about their cutting-edge research.
- > Gain transferrable skills that will launch you into a wide variety of careers.
- > Our well-established ecology Ecology and Conservation programme has been helping students discover their passion for Ecology for over 20 years and is the longest running programme of its kind in Aotearoa.

### TOPICS

The courses taught in the ecology and conservation major include:

- > Biodiversity
- > Ecology and conservation
- > Biological evolution
- > Environments and ecosystems

- > Freshwater ecology
- > Conservation science
- > Terrestrial ecology
- > Molecular ecology
- > Marine biology and ecology.

### Hands-on experience

Practical labs and field trips are an important part of all the ecology and conservation courses. Activities range from identifying fish and invertebrates for monitoring water quality, building a computer model to predict the recovery of an endangered species or set a sustainable quota for a fishery, or surveying biodiversity in a forest or the ocean.



Images by Professor Murray Potter



## KEY FACTS

- > Available at Manawatū
- > Available via Distance\*
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

\* requires participation in some compulsory courses

# Environmental Science

## A major of the BSc

### A GOOD FIT IF YOU...

- > Have a passion for the environment
- > Enjoy subjects that address global and national challenges
- > 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. 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. Our global reputation depends on us becoming truly clean and green despite the increased pressure on the environment.

Join one of New Zealand's leading universities in the study of environmental problems and impacts.

The Bachelor of Science (Environmental Science) will see you become involved in Massey's aims to develop a sustainable path for the future. We are looking to solve real-world issues such as managing natural resources and environmental impacts.

The programme considers global environmental problems and has a focus on land and water science, and the impact of primary production on the environment. The environmental impact of food production is a particular challenge for New Zealand. You will use skills in GIS ((Geographic Information System) software, remote sensing, land use capability, and practical field techniques such as groundwater monitoring, to explore the processes that impact soil and water quality. By combining environmental science with elective courses in agriculture, horticulture, or animal science, as well as others from science your skills will help you to address global issues like those associated with sustainably feeding a growing population.

To take your studies overseas, you can progress into our postgraduate programme in environmental management, where you could undertake research all over the world.



Some of the topics include:

- > Environmental issues and solutions
- > Environmental management
- > GIS and remote sensing
- > Landscape and human ecology .

### Taught by the experts

Our researchers and teachers have an excellent reputation and are widely published internationally. You will be taught by experts in earth science, 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.

## KEY FACTS

- > Available at Auckland
- > Minor available at Manawātū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# 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 and performance.

### Get scientific and practical skills

The Exercise and Sport Science major is ideal for you if you want a broad base in science coupled with knowledge and skills related to exercise and sport performance.

With the Exercise and Sport Science major, you will study the key sport and exercise subjects including:

- > Biomechanics
- > Exercise physiology
- > Motor control
- > Sport nutrition
- > Sport psychology.

Complemented by a strong understanding of other biophysical sciences, you will gain an in-depth knowledge of factors that influence health and sports performance.

Our research-active staff will help you apply the latest knowledge to various sporting situations. You will gain an understanding of how to optimise athletic performance and health through technology, nutrition, psychology and exercise. Additionally, you will learn how training and performance are affected by different environments and the power of the mind.

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 courses such as sport development, exercise prescription, or science qualifications such as physiology and human nutrition.

## CAREERS

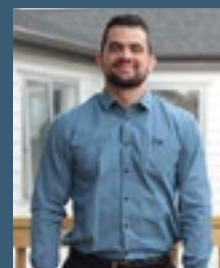
Massey's exercise and sports science graduates have an excellent reputation in the health sporting industries, including:

- > Sport scientist working with individual athletes, sports teams, sports coaches and regional sporting bodies
- > Providing exercise and health guidelines to clients
- > Providing occupational health advice to companies and local bodies
- > Teaching at secondary and tertiary level.

### ■ JOEL ARMSTRONG

BSc (Exercise and Sport Science)

I have always had a keen interest in sport and performance. I began to look for ways to understand and improve my own sporting performance. After familiarising myself with some basic sport science knowledge, I decided to enrol and further my learning. I have really enjoyed studying at Massey and the Sport Science staff have always been extremely supportive throughout my time here. Massey has also presented many opportunities for internships and work experience which have proved to be invaluable learning experiences for me. I chose Massey as I liked the idea of smaller class sizes and a more accessible university. This allowed me to develop relationships with my lecturers, post-graduate students and my classmates.





## KEY FACTS

- > Available at Auckland
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# Human Nutrition

## A major of the BSc

### A GOOD FIT IF YOU...

- > Enjoy working with people
- > 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 Bachelor of Science (Human Nutrition) is for you.

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 a wide range of knowledge. That could range from nutrient supply and metabolic processing to psychosocial and behavioural factors influencing diet. The Bachelor of Science (Human Nutrition) is designed to give you a clear understanding of basic nutritional principles. You will also learn about 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. It also looks at the changes in nutritional needs from conception through birth, growth, adulthood, and ageing. You will gain an understanding of factors that influence food choice and awareness of practices to promote dietary change.

### Help ensure people are healthy

With Massey's BSc (Human Nutrition) You will 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 so you can work at promoting good nutritional practices to individuals,

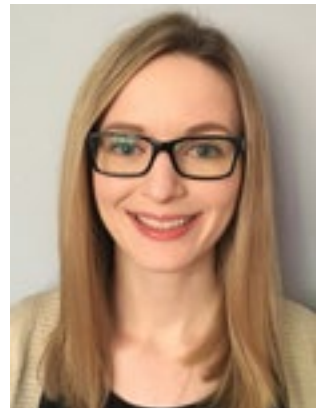
communities and industry. You will also gain an insight into how diet contributes to your own personal health and well-being.

### ■ KATIE SCHRADERS BSc (Human Nutrition)

PhD candidate

Part way through my first year I enrolled in a Physiology paper which I found fascinating. I hadn't really known what physiology was about when I was at school. So, I changed my majors to Physiology and Human Nutrition. It's one of the fantastic things about the Bachelor of Science programme at Massey – it's flexible and allows you to change direction easily.

Studying these subjects has given me the opportunity to meet and be taught by some of the most inspiring and intelligent people I have ever (and possibly will ever) meet. The teaching staff are wonderful and caring. They are the sort of teachers who reply to your panicked emails at 4am, or while they're meant to be on holiday and invest time and energy into their students to help them find their own passions. This experience, along with the support and encouragement of the teaching staff, led me back to Massey to start my PhD.



## KEY FACTS

- > Available at Auckland
- > Available at Manawātū
- > Available via Distance Learning (subject to planning advice)
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand or via Distance Learning.

# Mathematics

## A major of the BSc

### A GOOD FIT IF YOU...

- > Think logically and analytically
- > Are a creative problem solver
- > Had an interest in mathematics at school.

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

#### Real-world skills

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

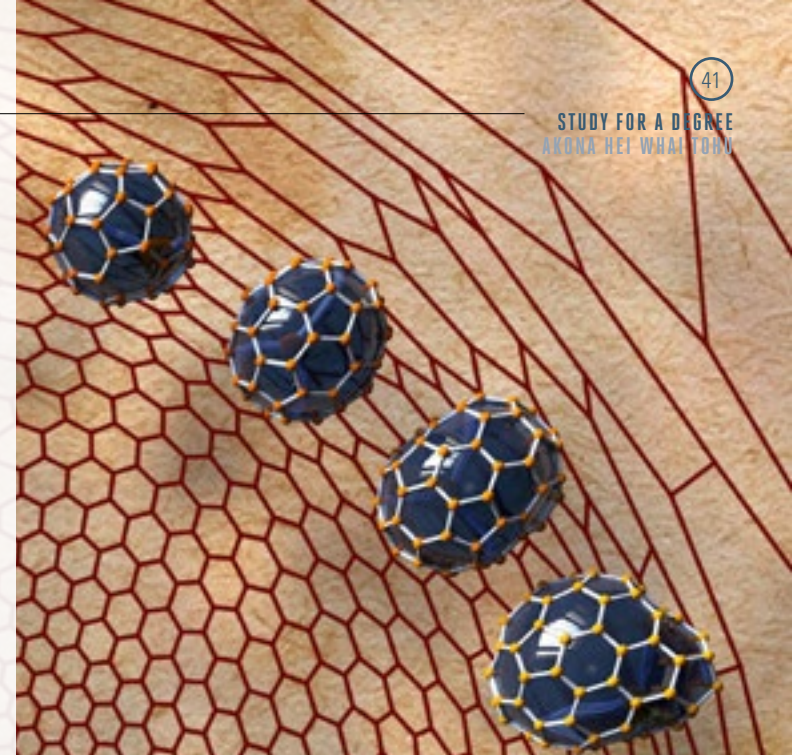
#### Learn from the leaders

You will have access to some of the world's top mathematical minds. You will graduate well-grounded in basic mathematics principles and be stimulated by your exposure to the latest research and discoveries.

Our mathematics programme is taught by leading researchers who work in areas such as 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 problems mathematically-skilled scientists can become involved in.

#### Careers in Mathematics

Mathematics is a tool for communication and understanding that crosses all boundaries and connects with all subjects and areas. It combines particularly well with other areas of science, social science, and business.



Mathematics graduates are highly employable because their skills are needed in so many areas. Business and agencies are constantly collecting and interpreting data and using it to build understanding and help make decisions.

### TOPICS

Mathematics at university starts by building on high school algebra and calculus. But it develops into many new and different directions, including:

- > Matrices and vectors, for working with large amounts of data
- > Discrete maths, which describes structures like networks and algorithms
- > Differential equations, which are used throughout science, engineering, and industry
- > Modelling, in which mathematical descriptions are developed for new, real-world situations.

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 computer science, finance or statistics.

## KEY FACTS

- > Available at Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# Microbiology

## A major of the BSc

## A GOOD FIT IF YOU...

- > Like making discoveries
- > Want to have a career where you can make a difference in the world.

Massey University is one of only three universities in New Zealand where you can study a microbiology major.

Microbiology is an essential science that helps us understand the microbes in the environment, including microbes that dwell in the soil, air and water, in our food and inside people, animals and plants. Microbiology can impact on many different areas, such as:

- > Agriculture, where rumen microbes are both essential to dairy and good industries, but also responsible for much of New Zealand's carbon emission
- > Bioprotection, where efforts to preserve native birds (kiwi) and plants (kauri trees) depend on expert control of microbial pathogens
- > Microbes have applications as model systems and are the chief resource of enzymes and other tools used to answer questions beyond the immediate range of microbiology, such as diagnostics, the causes of cancer or birth defects
- > Green and bio-based technologies, where microbes help preserve our environment by producing bio-based materials for use in diagnostics and vaccines or by harnessing solar energy for fuel production.

## Multi-disciplinary

In the Massey Bachelor of Science (Microbiology) you will learn about microbiology hand-in-hand with other science areas such as veterinary, animal, and environmental science. This allows you to explore microbiological disciplines, including environment/ecology, medical, veterinary and food microbiology, and biotechnology.

Some of the topics taught in microbiology courses include:

- > Bioinformatics and genomics
- > Biotechnology
- > DNA technology

- > Environmental microbiology
- > Immunology
- > Medical microbiology
- > Diagnostic tests for infectious diseases (including SARS-CoV2)
- > Microbial diversity
- > Applied and industrial microbiology
- > Food microbiology.

## Practical laboratory experience

Laboratory skills and experience is a strong focus in the microbiology major. For example, you will get to do a lab-based simulated research project, such as identification of microbes in environment or food, or producing useful proteins in bacterial culture. As a graduate, you will have confidence with laboratory techniques and the unique ability to show potential employers that you are skilled in lab-based experiments.

You will have the opportunity to carry out research projects in the research laboratories by applying for summer studentships. You'll gain first-hand experience with full-time research and the opportunity to connect with potential employers.

## State of the art equipment

Microbiology undergraduates have access to:

- > fluorescence and optical microscopes
- > DNA sequencing facilities
- > protein analysis (mass spectrometry)
- > bioreactors and fermentation facilities.

## KEY FACTS

- > Available at Auckland and Manawatū
- > Equivalent to three years of full-time study
- > Available for international students studying in New Zealand.

# Molecular Cell Biology

## A major of the BSc

### A GOOD FIT IF YOU...

- > Liked biology at school
- > Are interested in biomedicine, genetics, and genomes
- > Are interested in the natural world
- > Want to learn molecular diagnostic techniques
- > Are curious about how life on Earth has evolved and continues to adapt.

Become part of the spectacular advances being made in science, medicine and agriculture through modern molecular, cellular, and genomic analyses.

The Bachelor of Science (Molecular Cell Biology) will teach you how an understanding of DNA, proteins and cells helps us understand life on this planet. Why do diseases or disorders develop and how can we diagnose and treat them? Where did we come from? How are microbes influencing our health? How are we using molecular biology to create vaccines and test for diseases such as COVID-19? How are organisms evolving to our changing planet?

This can in turn help create a better world – with better medicines, more efficient agriculture and better protection from disease for humans and our environment.

It is a discipline that unifies many others, from biochemistry to computer science to medicine and food production.

### Join science that is changing the world

During your study you will:

- > Find out how organisms are related and how evolution works at a molecular level
- > Learn how advances in molecular techniques and DNA sequencing are changing the face of medicine, agriculture, ecology and wildlife conservation.
- > Learn about advances in DNA sequencing – why certain diseases are prevalent and why genetic mutations can be good and bad

- > Learn how advances in molecular techniques and DNA sequencing are changing the face of medicine, agriculture, ecology and wildlife conservation.
- > Engage with cutting-edge technologies like genome sequencing and how to analyse large data sets using state-of-the-art computational tools.

We are in an era where new pathogens are emerging and existing pathogens are becoming more resistant to treatments. You will be taught by Massey lecturers who are actively researching a broad range of areas including cancer, COVID-19, the genetics of harmful bacteria, the evolution of viruses and bacterial organisms, and new methods to solve problems such as antibiotic resistance.

As a graduate of Massey's BSc (Molecular Cell Biology) you will have developed a sound working knowledge of the fundamental aspects of these disciplines. You will also develop skills in written and oral scientific communication, and we will help you develop an analytical approach to problem-solving. These skills are all sought after by employers and will ensure that you will have options in a wide range of careers, and the ability to progress quickly.



## KEY FACTS

- > Available at Auckland
- > Minor available at Manawatū
- > Equivalent to three years of full-time study
- > Available for International students studying in New Zealand.

# Physiology

## A major of the BSc

### A GOOD FIT IF YOU...

- > Like biology and chemistry
- > Are curious about how humans' and animals' bodies work
- > Want to work in human or animal health sciences.

### 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!

Ever wondered how your diet influences the skeleton, or how the stomach and intestines process food, or even how climate change impacts the survival ability of penguins? Your teachers are at the forefront of research like this. They'll use it in their teaching, so what you learn is relevant and engaging.

Physiology explains how cells, tissues and organs work together to maintain normal body function. It is the basis of modern medicine, connecting science and health, so we can recognise and understand problems, helping us develop new treatments for disease.

You will gain a broad understanding of the functions and integration of the major organ systems of the body, progressing to more in-depth insights as your study progresses.

### Follow your interests

You can choose from a wide variety of courses to complement your physiology study at Massey; that could include anything from agribusiness, psychology or human nutrition to environmental science, zoology or sport and exercise.

### TOPICS

- > Adaptive human physiology
- > Cell physiology
- > Metabolic physiology
- > Human lifecycle physiology
- > Physiological control systems
- > Physiology of mammalian organ systems.

### Transferable skills

You will also learn skills that will be useful, no matter what field you end up working in, like critical thinking, planning, analysis and communication skills.

### CAREERS

Physiology is key if you want to work in human or animal health sciences.

### Wide variety of options

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 zero 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.

## KEY FACTS

- > Available at Manawatū
- > Equivalent to 3 Years of full-time study
- > Available for International Students studying in NZ.

# Plant Science

## A major of the BSc



## A GOOD FIT IF YOU...

- > Are interested in working with plants
- > Enjoy the sciences.

### A crucial industry

Join the Bachelor of Science (Plant Science) at Massey – the only university in New Zealand where you can study and specialise in the full spectrum of plant science from molecular biology and evolution right through to agriculture and horticulture.

## WHAT IS IT LIKE?

Nearly all life on this planet is ultimately dependent on the primary productivity of plants. The study of plants is a fascinating investigation of the origins of life, the natural world and the future of life on Earth. The Bachelor of Science (Plant Science) will help you understand the crucial biological processes that underpin the very basis of life on Earth – and ultimately our own survival.

### Join a world-leading, relevant university

Massey is New Zealand's top-ranked university in agriculture according to the QS (Quacquarelli Symonds) rankings, and this ranking is supported by strengths in plant science.

Our proud record dates back to 1927 when we offered New Zealand's first degrees in agriculture and horticulture. As a student, you will benefit from our internationally-recognised capability and leadership in this area. Massey has over 50 years experience in plant-based sciences and has the largest number of plant scientists of any New Zealand university. We have years of experience and have been consistently developing our courses over time to remain relevant for today's employment opportunities.

### Understanding the plant world

Studying the Massey University Bachelor of Science (Plant Science) will give you a solid understanding of the fundamental elements of the structure and function of plants. You will learn how plants grow and interact with their environment and also how to apply this knowledge in both natural and managed ecosystems.

### Vital communication skills

A vital element of a scientific career is the ability to communicate your work clearly to future colleagues and employers. At Massey we help you gain the skills to emerge as a well-rounded and effective communicator.

### Investigate contemporary issues

With this degree you will also develop related skills in contemporary disciplines such as high-throughput gene sequencing and bioinformatics (the analysis of nucleic acid and protein sequences using computers). This can assist in understanding evolution and biodiversity. You will play a vital role helping us better understand everything from bioconservation issues to the effects of climate change, and be able to take a diverse range of courses that could lead to study at postgraduate level in a Postgraduate Diploma or Master of Science.

### ■ EMILY SMITH BSc (Plant Science)

Bachelor of Science with Honours (Plant Science and Microbiology) PhD Candidate

I chose Massey because it has a good reputation for having an excellent science programme. Lecturers bring their passion into lectures and labs and really engage the students. Lectures felt more like educated discussions rather than simply being told information. I took a different internship each summer break, one of which led to a part-time job. I also got involved in the Massey Horticulture Society, which gave insight into the more applied side of plant science through guest speakers and visits to growers. It was a great way to meet other students interested in plant science.



## KEY FACTS

- > Available at Auckland\* and Manawatu\*
  - > Available via Distance Learning\*
  - > Equivalent to three years of full-time study
  - > Available for International students studying in New Zealand or via Distance Learning.
- \*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 will 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 will learn how factors like culture, gender, poverty, and mental illness affect our health, our thinking, and our behaviour.

### Market leading in New Zealand

Massey graduates 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.



## TOPICS

Some of the topics taught in psychology courses include:

- > Introduction to clinical psychology
- > Bicultural perspectives in psychology
- > Brain and behaviour
- > Community psychology
- > Evolution, learning and culture
- > Memory and cognition
- > Organisational psychology
- > Social psychology.

## 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 the bachelor's programme, postgraduate study may give you the opportunity to practice as a registered psychologist in clinical or organisational settings.

## KEY FACTS

- > Available at Manawatū
- > Available via Distance Learning
- > Minor available at Auckland
- > Available for International students studying in New Zealand or via Distance Learning.

# 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
- > Enjoy and are confident in using computers and software to solve problems.

### Theory and practical relevance

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. Statistics involves the careful analysis of underlying questions and critical examination of the sources of data. Modelling the variability in data to evaluate evidence is part of this broad science.

As a Bachelor of Science (Statistics) student you will learn the quantitative skills to conduct robust statistical analyses that are effective in the real world. With these broadly useful skills, statisticians are able to work across all areas of science and industry – anywhere that data are found.

### Sought-after skills

You will learn how to work with large data sets to test ideas, discover patterns and draw conclusions. They are sought after skills for many employers. As one of New Zealand's first universities to offer courses in data mining, Massey has both the experience and strength to ensure you graduate a step ahead of the rest.

## TOPICS

- > Data analysis
- > Statistical models
- > Regression models
- > Biostatistics
- > Design and analysis of experiments
- > Multivariate models
- > Data mining
- > GIS and spatial statistics.

### Learn from the best

Our lecturers are active researchers and we bring that research to your learning. You also benefit from Massey's broader expertise. You will gain a practical understanding of the many different applications for statistics.

### Complementary skills that set you apart

You could choose to take a minor with your statistics major by incorporating a wide range of courses, from volcanology and earth sciences, to infectious diseases and population ecology. If you are studying other science subjects or looking at studying business, studying statistics as a complementary subject can set you apart when applying for jobs.



## KEY FACTS

- > Available at Auckland and Manawātū
- > Equivalent to three years of full-time study
- > Available for International students studying in New Zealand.

# Zoology

## A major of the BSc

### A GOOD FIT IF YOU...

- > are passionate about the natural world and animals
- > want to understand and know everything about animals.

#### You will be in demand

Massey's Zoology graduates are in high demand throughout New Zealand. This is a unique degree in 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. It also includes the study of animal behaviour.

#### The latest thinking

Massey University is one of the few universities in New Zealand that offer a Zoology major.

You will 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 will explore freshwater and marine systems, and our wide range of speciality fields including conservation of biodiversity.

#### 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. They have worked in places like Samoa, South Africa, the Netherlands and United States. You will graduate ready to join them, and to 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 environment 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.

### WHAT WILL YOU STUDY?

The Zoology major offers you a wide range of areas to explore from the fundamentals of mainstream zoology to special interest areas. The core Zoology qualification looks at animals on a variety of scales.

You will gain skills in a broad range of related sciences including ecology, conservation diversity and evolution. This major is not just about land-based animals and environments; you will also explore freshwater and marine systems.

#### 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. The level of animals as components of systems is covered 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) invertebrates (crustaceans, insects), and at their impact on New Zealand indigenous plants and animals. Another interesting area is the study of animal behaviour.



## KEY FACTS

- > Available at Manawatū
- > Equivalent to five years of full-time study
- > Six-month pre-selection semester (open entry) and 4.5-year professional phase (selected entry).
- > Available to international students studying in New Zealand.

## A GOOD FIT IF YOU...

- > Do well in science
- > Like solving problems and are self-motivated
- > Want a challenging and rewarding career working with animals and people
- > Enjoy being part of a team and are a good communicator.

## Join a world-leading veterinary science programme

By studying veterinary science at Massey University you will join a world-class veterinary programme that will qualify you to work as a veterinarian in many different countries.

## WHAT IS IT LIKE?

Massey is the only university in New Zealand that offers veterinary training, and the degree is widely recognised internationally. Veterinary science is a key focus for Massey University's Palmerston North campus and we now have some of the best facilities in Australasia. In recent years, the Veterinary School's facilities have been completely rebuilt with new, teaching spaces opening in 2022. The last of the new buildings (staff offices, research laboratories, the student commons and another teaching laboratory) will be completed in 2024. Massey University's veterinary school is ranked 29th in the world for veterinary science by Quacquarelli Symonds (QS) ranking.

## Challenge yourself

In line with the international recognition for the degree, you will find that the study of veterinary science is rigorous and challenging. You will need to work hard, and apply yourself, but the result will be an interesting, varied, and rewarding career. You will need a good background in the sciences if you want to become a veterinarian.

The Massey University Bachelor of Veterinary Science (BVSc) is fully accredited by the Australasian Veterinary Boards Council (AVBC) and the American Veterinary Medical Association (AVMA) Council on Education. The BVSc is also recognised through

# Bachelor of Veterinary Science BVSc

reciprocity by the Royal College of Veterinary Surgeons (RCVS) and the South African Veterinary Council (SAVC).

This means you could work as a veterinarian not only in New Zealand, but also Australia, the United Kingdom, Canada, the USA, and many other countries. Our veterinary school was the first in the Southern Hemisphere to be accredited by the AVMA and our BVSc is recognised as being equivalent to a Doctor of Veterinary Medicine (DVM) degree from an accredited North American university.

## How does it work?

The BVSc is a five-year (10-semester) programme. The first semester (beginning in February) is referred to as the 'pre-selection' phase. Depending on your performance in this pre-selection phase on the Manawatū campus, you may be selected to the 'professional phase' of your qualification, beginning in July (4.5 years long). Selection is highly-competitive so focussing on great results for your first semester is vital.

Once you are in the programme, you will study core medical sciences (tailored for veterinary students), as well as normal and then abnormal animal structure and function. Then you will be taught how to 'fix' animals, or return them to normal function through clinical studies, medicine, surgery, and health management of companion and agricultural animal species.

Throughout years 1-4 there is a focus on professional attributes for veterinarians, and integrative problem-oriented courses. These integrative courses encourage students to apply the information learned in the other individual courses to real-life veterinary cases and scenarios designed to develop problem-solving and critical thinking.

In your final year, you get to choose an area of interest (track) and will undertake lots of workplace learning while you are studying. This gives you invaluable on-the-job experience. This individualised final year curriculum allows you to further explore areas of interest while ensuring wide coverage of the main veterinary species.



During the programme, you will attend lectures, tutorials, practical classes and clinical sessions and undertake farm and veterinary practical work outside of university semester time.

### PATHWAYS TO POSTGRADUATE STUDY

Most BVSc graduates start working in clinical practice. Qualified veterinarians can undertake on-the-job postgraduate qualifications or return to university to study at a postgraduate level. There are also opportunities to undertake further veterinary training to become a specialist.

### CAREERS

If you work as a clinical veterinarian you will provide high-quality care for animals, whether they are pets, working animals, farm livestock or wildlife.

You will use diagnostic and communication skills to promote the health and wellbeing of a range of animals, to make a real difference for both them and their owners.

There are many other career opportunities for you with your veterinary qualification, such as:

- > Animal disease investigator helping to diagnose new and emerging animal diseases, and working on responses to potential outbreaks
- > Food safety veterinarian and other contributions to public health
- > Veterinary researcher contributing to animal health and production
- > Protecting New Zealand wildlife in the Department of Conservation.

You could also become a specialist by completing further study. There are veterinary specialists in many areas including oncology (cancer), ophthalmology (eyes), dermatology (skin), epidemiology and surgery. You could use your specialist skills to make your mark as a university lecturer, helping to teach and inspire the next generation of veterinarians.

### ENTRY & PRE-SELECTION REQUIREMENTS

If you meet the requirements for admission to Massey University, you can enrol in the pre-selection phase in Semester One on the Manawatū campus.

In order to give yourself the best chance of being selected into the professional phase, it is recommended that you have completed the following (or their equivalent) before commencing this phase:

- > 14-20 credits of NCEA Level 3 chemistry and biology
- > Credits in NCEA Level 2 mathematics and/or physics.

From 2023 there are 125 places for domestic (NZ) students in the professional phase of the BVSc programme, and about ~350 students apply for these places. Students who are not selected can credit passed courses towards other Massey degrees and may reapply for selection in the future up to a total of 3 attempts. The selection process is based on academic and non-academic assessments. These are held during the first semester of pre-selection; they consist of online assessments and in-person assessments held on the Manawatū campus. Please see the planning tab of the Bachelor of Veterinary Science web page for more details. If you are selected into the professional phase you will take a range of courses covering everything you need to become a qualified veterinarian.

#### ■ SHAWN CHANDRAKUMAR BVSc

**Rotating Intern – Massey University Veterinary Teaching Hospital**  
I thoroughly enjoyed my 5-year degree at Massey. I made lifelong friends while learning essential knowledge and skills which have helped me to start my new career. The veterinary degree is definitely a very challenging and demanding course but all that hard work pays off in the end. I was lucky enough to get a rotating internship at the Massey Veterinary Teaching Hospital. I rotate through the various departments of the hospital (medicine, surgery, anaesthesia and emergency) helping to take care of the patients which have been specially referred to Massey for care.

## KEY FACTS

- > Available via Distance Learning
- > Equivalent to one year of full-time study
- > Available for part time study only
- > Available for International students studying in New Zealand or via Distance Learning
- > Available only for students employed in the dairy industry.

## WHAT IS IT LIKE?

Massey University's Diploma in Dairy Technology is for those working in the dairy industry. It provides essential skills for new employees to the dairy industry as well as providing upskilling and opportunities for diversification for established employees within the sector.

The Diploma could also be a good way to get dairy-industry-specific knowledge if you have a non-specialised degree or have previously worked in a different industry.

## KEY FACTS

- > Available at Auckland
- > Available via Distance Learning
- > Equivalent to one year of full-time study
- > Available for international students studying in New Zealand or via distance learning.

## WHAT IS IT LIKE?

Facilities management is the final step in the design-build-manage cycle of construction. As a facilities manager you will oversee the operational management and maintenance of buildings once they're built to ensure our public spaces and workplaces are safe, healthy, sustainable, and productive. You will contribute significantly to the success of an organisation by making sure buildings are fit-for-purpose. That ensures everyone can perform their jobs effectively and efficiently.

The Diploma in Facilities Management is aimed at school leavers and also at junior level facilities management professionals. For those already in the workforce, it will assist you to underpin your skills and practice with foundational knowledge of a rapidly growing sector.

You will learn about operational maintenance and management of built facilities. Skills You will learn include:

- > Facilities management planning
- > Asset management
- > Health and safety

# Diploma in Dairy Technology DipDairyTech

You will study elements of dairy microbiology and food safety, engineering, processing and chemistry. Ingredient and product technology as well as manufacturing principles are also part of the curriculum.

## Flexible and practical

The Diploma in Dairy Technology is offered via distance learning with compulsory contact workshops, which are on-campus block mode sessions at the Massey University Manawatū campus.

# Diploma in Facilities Management DipFM

- > Teamwork and communication
- > Business and financial skills
- > Technology and innovation.

The programme also covers a range of facilities. These include:

- > Hospitals
- > Commercial office blocks
- > Educational institutions
- > Industrial buildings
- > Key support services.

## RESEARCH-LED LEARNING FROM INDUSTRY EXPERTS

Your lecturers are professional experts in the fields of construction, facilities management, architecture, business, engineering, IT and other industries. Your lecturers are active in research, ensuring you will be at the cutting edge of this fast-growing industry.

# MASSEY OPEN DAYS 2023

VET INFO EVENING: 1 AUGUST  
MANAWATŪ: 2 AUGUST  
AUCKLAND: 11 AUGUST  
WELLINGTON: 25 AUGUST

[massey.ac.nz/opendays](https://massey.ac.nz/opendays)



**MASSEY  
UNIVERSITY**  
TE KUNENGA KI PŪREHUROA

UNIVERSITY OF NEW ZEALAND

# How to contact Massey

## 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.

## 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 **+64 6 350 5701**.

Dedicated international, Māori and Pacific student advisers are also available.

## QUALIFICATION GUIDES

We produce a range of supplementary guide publications with qualifications grouped around particular interest areas. They provide details of entry requirements, majors, course structures and potential career outcomes covering all our qualifications.

To obtain copies of these guides, see [massey.ac.nz/yourguideto](https://massey.ac.nz/yourguideto)  
Email: [contact@massey.ac.nz](mailto:contact@massey.ac.nz)

## EVENTS

### CAMPUS OPEN DAYS

See [massey.ac.nz/opendays](https://massey.ac.nz/opendays)  
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:

Email: [contact@massey.ac.nz](mailto:contact@massey.ac.nz)

Visit: [massey.ac.nz/events](https://massey.ac.nz/events)

## INTERNATIONAL STUDENTS

The International Recruitment team 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](mailto:international@massey.ac.nz)

Web: [massey.ac.nz/international](https://massey.ac.nz/international)

## SOCIAL MEDIA



### FACEBOOK

[Facebook.com/masseystudyabroad](https://Facebook.com/masseystudyabroad)



### TWITTER

[@Masseyintoffice](https://twitter.com/Masseyintoffice)



### INSTAGRAM

[@MasseyUni](https://instagram.com/MasseyUni)



### YOUTUBE

[youtube.com/masseyuniversity](https://youtube.com/masseyuniversity)



### WECHAT

[MasseyUniversityNZ](https://wechat.com/MasseyUniversityNZ)