Mātai Koiora Rorohiko
Undergraduate Computational Biology

The research conducted by biologists and life scientists now routinely requires computation and complex data analysis.

What you will learn

Computational Biology is designed to equip people with fundamental knowledge and skills across biology, computer science, mathematics and statistics in order to develop computational biology, genetics and bioinformatics skill sets.

Learn how to develop algorithms, methods and models to understand biological systems, evolution and relationships.

There are many routes into a degree in Computational Biology. If you've done any one of these subjects at high school, you will be well-equipped to get started: biology, chemistry, computer science, mathematics, statistics, physics.

Complementary subjects

Computational Biology is studied as a specialisation in the Bachelor of Advanced Science (Honours) degree, or BAdvSci(Hons).

As a Computational Biology student you'll take a range of complementary courses from the following subject areas:

- **Biological Sciences**
- **Biomedical Science**
- **Chemistry**
- **Computer Science**
- **Mathematics**
- **Statistics**

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[1]QS World University Rankings 2022 | [2]QS Graduate Employability Rankings 2022

Career opportunities

A new biology for the digital age

A Computational Biology specialisation can open up opportunities in biological and life sciences research, as well as in industry.

You'll develop expertise in computer science, statistics and data analysis, which provides you with the core skills necessary for a career in computational biology, but are also transferable to careers in software design, software development and data analysis, especially where some knowledge of the life sciences is useful.

You could find yourself modelling complex human diseases, analysing large amounts of genomic data, or creating computational models for gene editing in commercial species.

Your ability to develop algorithms, statistical methods and models to understand biological systems will give you cutting-edge skills to tackle the deluge of big data in the digital age.

Jobs for our Computational Biology graduates include:

- Bioinformatician
- Biotechnology consultant
- Data scientist
- Environmental scientist
- Academic researcher
- Pharmaceutical technician
- Scientific adviser
- Software designer

What you can study:

- Algorithms and machine learning
- Biodiversity, ecology and evolution
- Genetics
- Statistical modelling
- Software development

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-comp-biology

"I decided to pursue a Bsc in Biology with the eventual goal of completing a Master's Degree and then a PhD. Currently I am in the process of completing my Master's thesis.

"My goal with achieving a PhD is to become a lecturer and be in a position to help more Māori students like myself, giving guidance and support in the same way my supervisors have helped me."

Daniel Harrison

MSc in Biological Sciences and BSc in Biology.

Read Daniel's full story at: science.auckland.ac.nz/daniel-harrison

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auckland.ac.nz/student-hubs

Mātai Pūtaiao Rorohiko
Undergraduate Computer Science

Computing technology permeates our lives, and with that comes the demand for specialists to imagine, develop and maintain that technology. As a Computer Science student at the University of Auckland, you'll be prepared to meet that demand.

What is Computer Science?

Computer technology, it seems, is everywhere in today's world. It has become an ever-growing part of human life, affecting many aspects of a person's day. Computer scientists have an impact on how our society advances by developing and maintaining these systems: whether it be for our home, work, learning or entertainment environments.

We'll cover:

- How information is stored in computers (data structures and management)
- How computers are told what to do (algorithms and programming languages)
- How systems work (computer architecture and system software)
- How computers are connected (data communications, networks and hypermedia)
- Some ways in which computers can be used (applications)
- What computers can do, and their limitations (computability and complexity theory)

If you're interested in a relevant and dynamic field of study, and working in an industry where there is a real demand for expertise, then Computer Science is for you.

What you will learn

Studying Computer Science gives you an understanding of the conceptual building blocks of computers, software, and communications between computers. You'll tackle topics as diverse as algorithms, artificial intelligence, programming languages and networks, and you'll develop sought-after skills in logical thinking, problem solving and analysis.

You don't need to have taken any particular subject at high school to study Computer Science with us, but digital technologies, mathematics and physics provide helpful background knowledge.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- **Management**
- **Logic and Computation**
- **Mathematics**
- **Physics**
- **Psychology**
- **Statistics**

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Career opportunities

Be everywhere in today's world

Computing technology has become an ever-growing part of human life, affecting many aspects of our day.

Computers are indispensable in fields such as education, medicine, commerce and engineering – as well as leisure. We can't imagine what we would do without them, and the innovations just keep on coming.

As the demand for new technology continues to grow and change, Computer Science is always at the forefront of developments and industry is keen to employ our graduates.

By studying Computer Science, you may have an impact on how our society advances by developing and maintaining software and systems.

You can look forward to working in many exciting areas, in an ever-widening variety of roles.

Our Computer Science graduates have been employed in the following jobs:

- Software engineer, Electronic Arts
- Application engineer, Datacom Systems Ltd
- Developer (Dynamics AX), UXC Eclipse
- Agile architect, Vocus Group NZ
- Technical consultant, Davanti Consulting
- Product development engineer, Fisher & Paykel Healthcare
- Linux system administrator, Solarix Networks Ltd
- Security analyst, SKYCITY Entertainment Group
- Software engineer, Microsoft

What you can study:

- Software fundamentals
- Database systems
- Artificial intelligence
- Human-computer interaction
- Computer graphics
- Cybersecurity and cryptography
- Advanced design and analysis of algorithms
- Global data communications
- Datamining and machine learning
- Web, mobile and enterprise computing

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-comp-sci

"I've found that research is like exploring the deep ocean, and I have always enjoyed sailing in the dark blue. The feeling of uncovering the truth makes all the hard work worth it.

"My favourite part of PhD life is that I have the freedom to spend three years on a research topic that interests me. I'm very lucky to be driven by my interests while young, and my efforts have led to a series of scholarly works that I am proud of.

"During my time working and studying in the University, I have developed friendships with colleagues from many different countries and cultures, and I benefited a lot from them."

Yang Chen

PhD in Computer Science

Read Yang's full story at: science.auckland.ac.nz/yang-chen

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Mātai Pūtaiao Raraunga
Undergraduate Data Science

Data scientists drive innovation and improve success in many areas: start-ups and established businesses, Government, science, media, broadcast and cultural events.

What is data science?

Data science applies techniques from computer science, statistics, and mathematics to drive insight in a particular domain, such as entertainment or finance. For that purpose, data scientists gather data from various sources, prepare the data for analysis, apply analytical techniques such as machine learning, statistical modeling or datawarehousing, and visualise the results to an audience.

University of Auckland and Data Science

The Department of Statistics is the birthplace of the R Project. Founded in 1996 by Associate Professors Robert Gentleman and Ross Ihaka. R is a programming language and environment for statistical computing and graphics. It is taught around the world and is used by Ivy League universities, Google, Uber, and many more organisations.

What you will learn

Both Computer Science and Statistics make a significant contribution to the Data Science specialisation. The University of Auckland is ranked first in New Zealand for statistics and operational research*.

Studying Data Science at the University of Auckland exposes you to the latest research and thinking in areas such as data wrangling, managing databases, machine learning, and predictive modeling.

Data Science students develop an enthusiasm for ideas, discovery and learning, and intellectual curiosity – do you have what it takes to turn data into information, knowledge and innovative products?

You don't need to have taken any particular subject at high school to study Data Science with us, but digital technologies, mathematics and physics provide helpful background knowledge.

How you will learn

Our academics are world-leading experts of data science. We host some of the few people in the world who can make changes to the code of R, as well as eminent researchers in areas such as algorithmics, databases, artificial intelligence and machine learning.

You will learn principles that will allow you to quickly adapt to many technology changes in your future career. You will learn data science hands-on, to not only understand state-of-the-art, but also apply it.

We have a diverse cohort of students you will easily integrate into. Dedicated students run our Data Science Club hosting many talks from data science leaders and running networking events. Our vibrant industry advisory group connects students with our local industry through guest lectures, projects, events, and internships.

We also offer a Master of Data Science that will allow you to take your studies further and advance your career.

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Birthplace of R

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Career opportunities

Data Science is an area of study which gives individuals the ability to manage and analyse big data, and drive innovation in organisations across all industries.

The last decade has seen an explosion in the amount of data available. It has evolved into one of the most important assets fo many employers. The ability to turn data into actionableinsights and innovative products often separates success from failure.

Currently there is an unmet demand for graduates in the field of data science. As a data scientist, you will have the skill set to drive innovation and affect the success of a diverse range of businesses and organisations.

There are a range of career opportunities available to you as you become a responsible citizen in a data-rich world.

Jobs for our Data Science graduates include:

- Data Scientist
- Data Analyst
- Data Engineer
- Decision Scientist
- Insights Analyst
- Risk Analyst
- Solutions Architect
- Business Intelligence Analyst
- Database Administrator
- Data Governance Engineer
- Data Strategy Analyst
- Data Architect
- Database Administrator
- Developer
- Information Officer
- Insight Manager
- Statistician

What you can study:

Data analysis and data technologies

Database systems

Programming and algorithmics

Artificial intelligence

Statistical modelling and computing

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-data-sci

"I really loved the blend of Statistics and Computer Science that Data Science offered; the programme gives you a solid skill set in both areas. This is extremely useful as it opens up so many career paths and gives you a lot to choose from depending on which skills you enjoy more."

Jasmine Chhor

Bachelor of Science in Data Science.

Read Jasmine's full story at:
science.auckland.ac.nz/jasmine-chhor

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Mātai Pūtaiao Kōrero Matawhenua
Undergraduate Geographic Information Science

If you've ever dropped a pin into Google maps, or found the shortest route using the public transport network, then you've engaged with Geographic Information Science (GIScience). GIScience is the study of the data structures and techniques used to capture, process and visualise geographic information.

What you will learn

As a GIS student you'll be taught how to use data collected by satellites and drones, government-sourced data, and social media platforms to examine a wide range of social and natural processes. You'll use modelling techniques to analyse data intensive contexts, and you'll try to answer questions like:

- What is the relationship between urban inequality and disease?
- What are the effects of sea level rise on coastal areas? How do resources flow across a busy transportation system?
- What are the risks of exposure to air pollution?
- How to map crime hotspots?
- What are the flood and landslide risks in different areas of New Zealand?
- What would be the best location to build a new wind farm or a hospital in the country?
- What does human movement tell us about disease transmission?
- What can we do to understand social dynamics and can we predict and map the effects of climate change?

This undergraduate major will provide you with the knowledge and skills to design and conduct appropriate analyses, and experience of working with cutting-edge tools and datasets. GIScience will also help you tackle the hardest challenges facing society.

You don't need a background in geography or computing at high school to study Geographic Information Science with us. The major embraces the latest GIS technologies and ways of thinking to enable you to apply your knowledge from a range of subjects.

First and second year courses do not have prerequisites but the third year courses build upon the knowledge gained in year 1 and 2. The program can be entered at the second year level without prerequisite knowledge.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

Computer Science
Earth Science
Environment Science
Geography
Marine Science
Statistics

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Career opportunities

A career for a rapidly changing world

It is estimated that 80% of data collected has some spatial component, whether it's a city name, a street address or even a precise set of co-ordinates.

Professionals in a wide range of fields use GIS tools to turn geographic data into maps, tables and other kinds of information needed to make informed decisions.

In a rapidly changing world, detailed, up-to-date geographic data are indispensable for governance, for commerce, and for research intended to improve our understanding of social and environmental systems.

As a GIScience graduate you'll possess sound theoretical knowledge and be able to demonstrate independent technical proficiency across the social, ecological and physical domains of GIScience application.

You could be employed by a large corporation or a local, regional or the national government. You could also work as a consultant with plenty of opportunities for travel.

Jobs related to Geographic information Science include:

- Cartographer
- Climate scientist
- Conservationist
- Data scientist
- Geographer
- Geospatial database developer
- GIS Analyst
- GIS technician
- GIS software developer
- Mapping and surveying technician
- Spatial data scientist

What you can study:

- Spatial thinking
- Geography of the human environment
- Earth surface processes and landforms
- Programming techniques
- Remote sensing

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-geo-info

"I have been able to understand and investigate the world's complex natural and social processes, the problems we face into the future, and most importantly how we can be the solution.

"Even if you have many passions, you'll be able to gain new insights and ways of showcasing them through learning and understanding GIS, as there are so many opportunities to use creativity and merge your own ideas and interests into practical assignments. It's such a broad field and although the courses scratch the surface into each aspect, if there's any software or technical skills you enjoy, I would encourage you to enhance them in your own time and supplement your learning that you receive in the programme - assignments often don't have boundaries, and they let you explore and go outside the box."

Taryn Smith

BSc in Geographic Information Science and Environmental Science.

Read Taryn's full story at: science.auckland.ac.nz/taryn-smith

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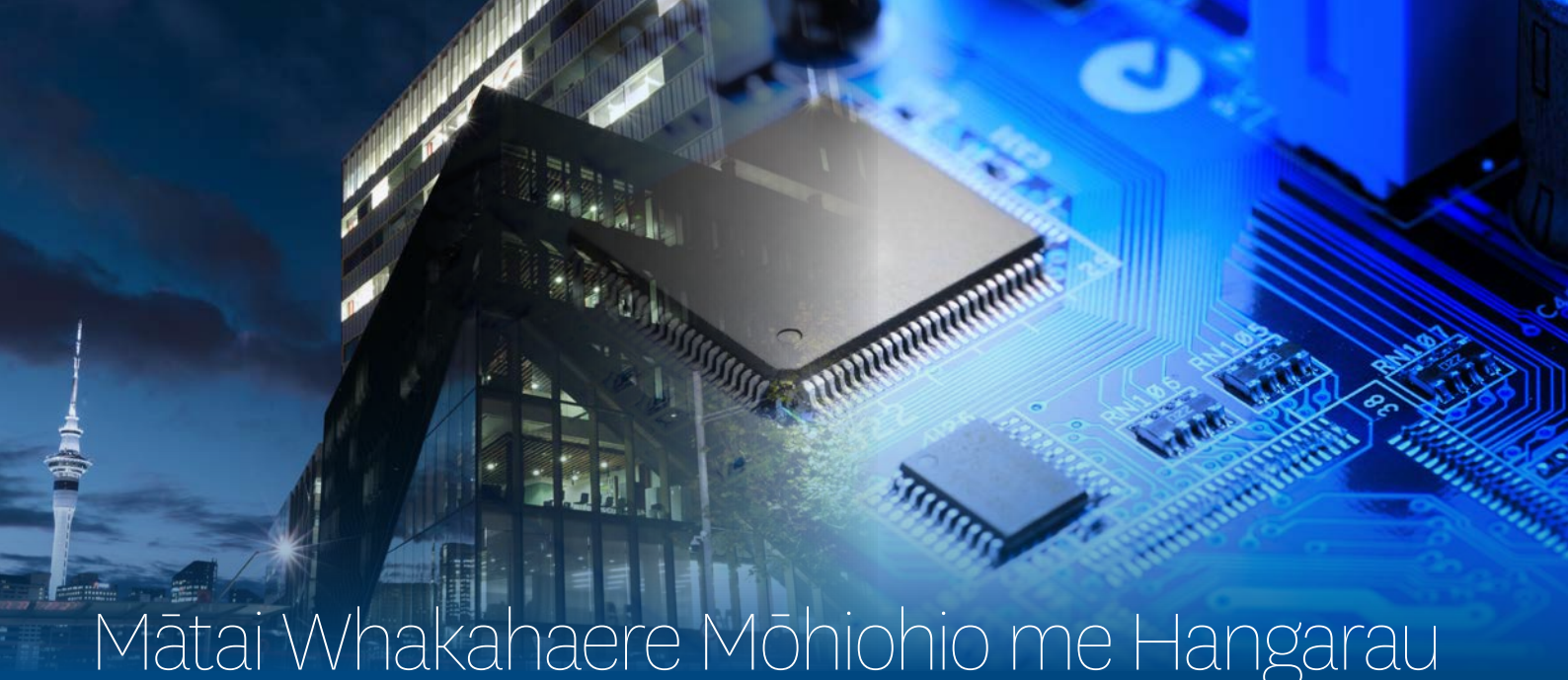

Mātai Whakahaere Mōhiohio me Hangarau
Undergraduate Information and Technology Management

If you're keen to combine computing skills with current business practice, then Information and Technology Management is the ideal major for you. You'll study how technology and information management are applied in the commercial sector, focusing on the analysis and design of systems for businesses.

What is Information and Technology Management?

Information and Technology Management is a subject jointly taught by the Faculty of Science and the Business School.

It revolves around applications of technology and information management in the commercial sector, focusing on the analysis and design of information systems for business. You'll learn how information and communications technology can be used to achieve strategic business goals, and how you can use cutting-edge products to solve important organisational problems.

What you will learn

As an Information and Technology Management student you'll take courses that allow you to understand information management from a systems, data handling, and process perspective. Studying Information and Technology Management at the University of Auckland means you'll learn in an environment that is ranked first in New Zealand for computer science and information systems, which includes Information and Technology Management**.

You don't have to have studied any sort of computing at high school to be able to study Information and Technology Management with us, but digital technologies, physics, mathematics and/or statistics provide helpful background knowledge.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- **Computer Science**
- **Logic and Computation**
- **Mathematics**
- **Physics**
- **Psychology**
- **Statistics**

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Career opportunities

An ever-widening variety of roles

Information and Technology Management is a prime force driving the software and systems of the modern online realm – and one of the fastest growing fields in the world.

With a major in Information and Technology Management, an exciting range of career opportunities is open to you in an array of industries.

As a graduate you could be involved with how information and communications technology can be used to achieve strategic goals.

You will be equipped to develop creative and innovative solutions, using cutting-edge products to resolve important problems in government, businesses and non-profit organisations.

Our Information and Technology Management graduates have been employed in the following jobs:

- Customer support and training representative, Cin7
- IT advisor, KPMG New Zealand
- Technical consultant, Olympic Software NZ Ltd
- Enterprise risk services consultant, Deloitte Limited
- CRM developer, New Zealand Tertiary College

Other positions and roles include:

- Application developer
- Infrastructure architect
- Database administrator

What you can study:

- Analysis of business systems
- Business intelligence
- Data communications
- Database systems
- Information security
- Information systems design

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-info-tech-management

"I wanted to study a field that will lead to a rewarding career; one that is intellectually fulfilling and offers exciting possibilities to work on innovative solutions."

Akali Reynolds

Graduate Diploma in Computer Science.

Read Akali's full story at:
science.auckland.ac.nz/akali-reynolds

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Mātai Arorau, Mahi rorohiko
Undergraduate Logic and Computation

Do you have a flexible mind capable of creative, speculative thought, precise calculation and practical problem solving? If you're interested in computer science, linguistics and philosophy, a major in Logic and Computation could be the ideal choice for you.

What you will learn

This major is relevant both to theoretical philosophy and the foundations of computer science. It can also be useful for technological applications in artificial intelligence. You'll have the chance to gain sound practical knowledge of programming and logical analysis, and to develop the conceptual, analytical and communication skills needed for a deeper theoretical understanding of the discipline. You'll also study the philosophical and linguistic issues at the root of the science of computation. Logic and Computation is available as a major in the Bachelor of Arts (BA) as well.

There's no need for having studied any sort of computing at high school to be able to major in Logic and Computation. Digital technologies, physics, mathematics and/ or statistics provide helpful background knowledge, but are not essential.

Recommendations

There are no particular prerequisites at the undergraduate level, but familiarity with mathematical thinking will help a lot.

For Logic and Computation we recommend the capstone course LOGICOMP 399.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- **Computer Science**
- **Information and Technology Management**
- **Mathematics**
- **Physics**
- **Psychology**
- **Statistics**

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Career opportunities

A rare combination of skills

Can you imagine life without your smartphone, your computer, or your gaming console? Computing technology is everywhere in everyday life. Every industry is becoming more and more dependent on computing technology and the market for experts in that field continues to expand and diversify.

Logic and Computation provides the link between theoretical thinking and real-world problems. As a graduate you'll acquire computing and programming knowledge, analytical and critical thinking, communication and problem-solving skills that you can apply to investigating complex problems.

With this mixture of practical and theoretical expertise from both the arts and the sciences, you'll leave prepared for a wide range of careers.

This is a rare and versatile combination of abilities that is highly valued and sought after in the business world.

Jobs related to Logic and Computation include:

- Business, systems or security analyst
- Cloud systems or software engineer
- Computer consultant
- Data, e-commerce solutions, software, information architect
- Database developer or administrator
- Digital designer
- Front end, game, systems or web developer

What you can study:

- Algorithms
- Artificial intelligence
- Critical thinking
- Grammar and syntax
- Logic and rationality
- Pragmatics

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-logic-computation

"This subject is unique. Once you have studied it, you won't forget it because it not only teaches you something practical, but also how to approach and solve problems of any kind."

Jack Lin

Bachelor of Science/Bachelor of Commerce conjoint, majoring in Computer Science, Logic and Computation and Information Systems.

Read Jack's full story at:
science.auckland.ac.nz/jack-lin

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Have any questions?

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Mātauranga Pāngarau
Undergraduate Mathematics

Mathematics has many faces. It can be challenging, powerful, fascinating, even mysterious – but above all it is useful. Wherever problems need to be solved, mathematics has a role to play. The University of Auckland is ranked first in New Zealand, and in the top 50 in the world, for mathematics[2].

About the department

The Department of Mathematics has an excellent reputation. Our staff include world leaders in many areas of theoretical and applied mathematics. We are known for high-quality teaching and we have a strong focus on student wellbeing and achievement.

Our degrees and diplomas enjoy widespread recognition from employers in New Zealand and throughout the world. Staff in the department serve their communities by being involved in a wide range of projects and organisations.

Whatever your background or interests in Mathematics may be, we welcome you to our department. If you need assistance with course advice, please contact us and our friendly staff will help you. We look forward to meeting you.

What you will learn

Mathematics makes essential contributions to the biological, information and physical sciences, economics, engineering and finance, but can also be applied to communications, linguistics and genetics. As a Mathematics student you'll study aspects of both pure and applied mathematics, and you'll be exposed to critical and meta-mathematical thinking: skills that are highly valued by employers.

Prerequisites

The Department of Mathematics would be glad to have you in our courses, no matter what you've studied in high school. However, if you're keen to jump straight in to some of our more advanced first-year courses, we recommend you take some calculus before starting your University studies. In particular, we recommend Year 13 differentiation and integration.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Complementary majors include:

- **Computer Science**
- **Information and Technology Management**
- **Environmental Physics**
- **Logic and Computation**
- **Physics**
- **Statistics**

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Career opportunities

A versatile degree for many roles

Mathematics is part of almost every sphere of knowledge and activity in the modern world because it is the language through which nature, technology and reality are described.

Studying Mathematics provides you with the skills and frameworks needed to tackle complex problems in an ever-changing world. Your analytical abilities, comprehension of abstract concepts, and creative thinking skills will improve. These skills are highly valued in business, financial, and technical roles, and in positions of leadership and management.

Mathematics is also an ideal supporting subject for many other disciplines. Your future prospects and employability in other fields are enhanced by significant mathematical content in your degree.

Graduating with a Mathematics degree opens up career opportunities for you in industry or Government, teaching, computer development and programming, systems analysis, operations research and many other fields.

Our Mathematics graduates have been employed in the following jobs

- Mathematical Software Group, National Institute of Science and Technology (USA)
- Consultant, Ernst and Young
- Account executive, Willis Towers Watson
- General Manager, Data and Analytics, Fonterra
- Analyst, New Zealand Treasury
- Finance officer, Te Kura
- Lecturer/Professor (too many to list!)
- Actuarial analyst, Suncorp NZ
- Training coordinator, Air New Zealand
- Mathematician, Jane Street
- Data analyst, IPSOS NZ
- Director of Business Intelligence, NZ Trade and Enterprise

You can keep your Mathematics major general, or you can follow one of these pathways:

BSc

Applied Mathematics: Methods to link together creative problem-solving skills with computational techniques, that let us understand and solve real-life problems.

Pure Mathematics: Abstract concepts, and the development of analytical, logical and creative thinking, and problem-solving skills.

BAdvSci(Hons) topics include:

Combinatorics and Algebra

Geometry and Topology

Differential equations

Real and Complex Analysis

Mathematics Education

Mathematical Modelling

Find out more

about how your degree will be structured and what courses you need to take at

science.auckland.ac.nz/ug-mathematics

"Having that relationship with the tutors made me fearless when it came to learning – it helped me take more control of my study. I succeeded because I realised that fear is the only thing that stops you from growing."

Halaevalu Tu'ipulotu

BSc double major in Mathematics and Statistics

Halaevalu's full story at:
science.auckland.ac.nz/halaevalu-tuipulotu

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Mātai Ōhanga Tatau
Undergraduate Quantitative Economics

The BSc in Quantitative Economics Specialisation produces graduates who can think critically, have excellent mathematical and quantitative skills, and who can understand, explain, and apply the core principles and quantitative methods of economics to resource allocation problems, the functioning of economic institutions, and the decisions of policy makers and other economic agents within society.

What is Quantitative Economics?

Economics is the social science that studies the behaviour and interactions of economic agents. In particular, economics examines the production, distribution, and consumption of goods and services. The Quantitative Economics specialisation equips graduates with both research-informed economic knowledge, and the analytical skills required to implement this knowledge in practical real-world situations.

Resource allocation decisions across a variety of domains in both government and business typically incorporate an economic analysis. Graduates will be equipped with the economic analytic tools to advise and make these decisions. The programme aims to produce graduates that are competent in economic theory and practice, and have the strong analytical and mathematical skills that are required for advanced economic theory and its application.

Who is this degree for?

The Quantitative Economics specialisation is intended for students who completed secondary school mathematics, and are interested in Economics with a focus on analytical and quantitative aspects. Students who are considering careers as Technical Consultants and Modellers, Economic Modellers working in Central Banks, Treasury, Banking Sector, or academic research, are great candidates.

Although their exact area of expertise will depend on the complementary field of study, economics graduates with a strong analytical and mathematical background are in demand both internationally and nationally. The challenges of the twenty-first century also necessitate a greater focus on the relationship between the economy, human society and the environment, and will require transdisciplinary graduates that can synthesize information in order to coordinate decisions across a variety of domains.

Prerequisites

Students entering the programme must satisfy the entry requirements for the BSc in Mathematics.

In their first year, students are expected to enrol in MATHS 120, 130, 162 and ECON 151, 152, as these courses are prerequisites for the stage 2 courses of the programme.

The programme is essentially a double major in Economics and Mathematics, so there are compulsory courses that cover the core stage 1 and 2 courses in both majors. The third year economics courses focus specifically on Econometrics and other quantitative aspects.

Compulsory courses include:

- **Microeconomics**
- **Macroeconomics**
- **Econometrics**
- **Mathematical Modelling**
- **Algebra**
- **Calculus**

UNIVERSITY OF AUCKLAND
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NEW ZEALAND

SCIENCE

No.1
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[1]QS World University Rankings 2022 | [2]QS Graduate Employability Rankings 2022

Career opportunities

An internationally in-demand degree

The specialisation will produce graduates that are ready for employment in businesses with a strong quantitative focus such as economic consultancies, and finance or accountancy companies, government departments, local and regional councils, universities and insurance companies and banks, where a high degree of numeracy is desirable.

Graduates will have demonstrated understanding of the thinking, research, theory and practice in Economics, Econometrics and Mathematics and appreciate the role of Economics and Mathematics in its contexts. They will be able to apply their Mathematical knowledge to concrete situations in Economics and Business.

Further study options include:

- Bachelor of Commerce (Honours) in Economics
- Master of Commerce in Economics
- Doctor of Philosophy

Students have gone on to pursue PhDs in Economics at Harvard University, MIT, University of Chicago, Yale University, Northwestern University.

Jobs related to Quantitative Economics:

- Economic Consultant
- Finance
- Government Departments
- Local and Regional Council
- Insurance
- Banking
- Academic Institutions

Employers of previous economics graduates include:

Policy Institutions, such as:

- New Zealand Treasury
- Ministry of Business, Innovation & Employment
- Reserve Bank of New Zealand
- Motu Economic and Public Policy Research

Private Sector Employers, such as:

- Goldman Sachs
- ANZ
- Fletcher Construction
- Fonterra
- GE Capital
- NERA Consulting
- HoustonKemp

Programme Structure

Programming skills in Matlab are developed within both Economics and Mathematics courses.

An additional feature is a programme-specific capstone course QUANTECON 399, which allows students in the degree to work on projects that allow them to apply their skills in Quantitative Economics to real-world problems.

What skills and attributes can I gain from my Quantitative Economics degree?

An in-depth understanding of fundamental economics concepts and theories

Analytical, computational and modelling skills

Data analysis and programming skills

Strategic and creative thinking skills

Strong sense of ethics and professionalism

Find out more

about how your degree will be structured and what courses you need to take at

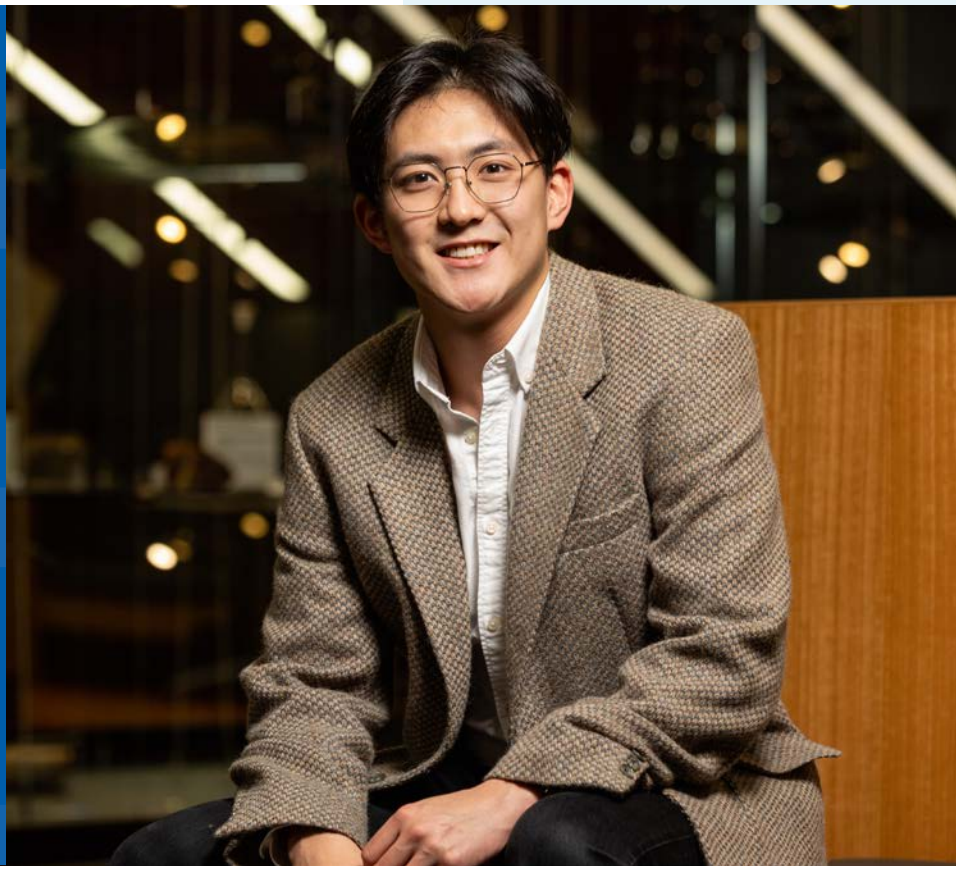
science.auckland.ac.nz/ug-mathematics

"I was interested in game theory and the strategic decisions players make that don't seem to have obvious explanations from the outset. This then led me to take an interest in industrial organisation and competition economics, which looks at the ways firms respond to different incentives."

Chenchen Huang

Conjoint BA/BSc in Economics, Mathematics and Physics

Chenchen's full story at:
science.auckland.ac.nz/chenchen-huang



Kuhua ki tō mātou hapori, ā, Kimihia tōu Pūtaiao.

Join our community and find your Science.

Applications close on 8 December.

Explore and discover

science.auckland.ac.nz/ug-mathematics

Have any questions?

Contact the Student Hub

auckland.ac.nz/student-hubs

Mātai Tatauranga
Undergraduate Statistics

Are you interested in looking critically at numerical information without being misled? Do you want to be able to make sense of data, and use it to solve problems? Statistics is the human side of the computer revolution, and you could be part of it.

A navigator in the information age

We live in an increasingly data-rich and digital world. Computers allow us to collect and store information in quantities previously impossible. Understanding statistics helps you understand our world, as it is statistics that allows us to extract meaning from seemingly incomprehensible data.

Statistics is also a fast-growing field of its own. Researchers in our department, and our graduates, tackle new questions in ecology, education, medicine, astrophysics, wine growing, and other fields, developing novel statistical methods, mathematical tools, and computational systems.

Statistics counts

Data collection and analysis and mathematical modelling of random processes were a foundation for COVID response in this country.

The same tools to support decision-making in the face of uncertainty continue to be needed now and in the future, in business and in government. Studying probability and statistics gives you the mathematical basis for modelling our complex and uncertain world.

What you will learn

As a Statistics student you'll study how to ask the right questions, how to collect and analyse data, and how to present information in meaningful ways. You'll be able to choose whether you keep your major general, or whether you study one of two dedicated pathways: Applied Statistics, or Statistics and Probability.

You don't have to have taken statistics or mathematics at high school to study Statistics with us – we welcome all students! However, high school statistics and/or mathematics provide helpful background knowledge. If you're interested in studying our probability courses you'll find it useful to have studied some differentiation at high school.

Prerequisites

If you are planning to take the Applied Statistics pathway or just a small number of applied statistics courses, then having some basic numeracy skills is all that is required.

If you want to gain some confidence in basic numeracy you can always start by taking STATS 100 or MATHS 102 before going on to further courses. No previous formal study in statistics is required.

Choosing a subject

With so many options it's sometimes hard to choose what you want to study, but we've got you covered. You can study a double major with our Bachelor of Science to gain a broader base of skills and knowledge.

Statistics complements all other Bachelor of Science majors, but it matches particularly well with:

- Computer Science
- Information and Technology Management
- Logic and Computation
- Mathematics
- Physics
- Psychology

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Career opportunities

A navigator in the information age

In one week a practicing statistician can help to investigate a case of disputed authorship, design an experiment to evaluate the effects of a new treatment for a disease, analyse a set of data gathered by an ecologist, and help a freight carrier to study work processes to find ways to make the company more profitable.

Statistics applies to almost any field; this is why some training in statistics can help make you more effective and more employable, regardless of the career direction you choose. Whatever field of statistics you specialise in, a Statistics degree will be an important step in opening up new and exciting career opportunities for you.

Our Statistics graduates have been employed in the following jobs:

- Network planning analyst, Air New Zealand
- Analyst, Goldman Sachs
- Data & Analytics Consultant, Servian
- Machine Learning Researcher, ESR
- Data Scientist, Harmonic Analytics Ltd
- Data Analyst/Consultant, Orion Health
- Data Scientist, Rokt: Ecommerce Technology Solutions
- Modelling Analyst, The Treasury - New Zealand
- Population Affairs Officer, United Nations, New York.
- Data scientist, ESR
- Digital Engineer, Tonkin + Taylor
- Research Assistant, Counties Manukau DHB

What you will study:

BSc

You can choose to keep your Statistics major general, or you can choose one of these pathways:

Applied Statistics: Choose this pathway if you're mainly interested in the practice of statistics.

Statistics and Probability: Choose this pathway if you're interested in both the application of statistics and the theory underlying it.

BAdvSci(Hons)

Topics you can study include:

Applied statistics

Data analysis

Mathematical statistics

Probability theory

Find out more

about how your degree will be structured and what courses you need to take at

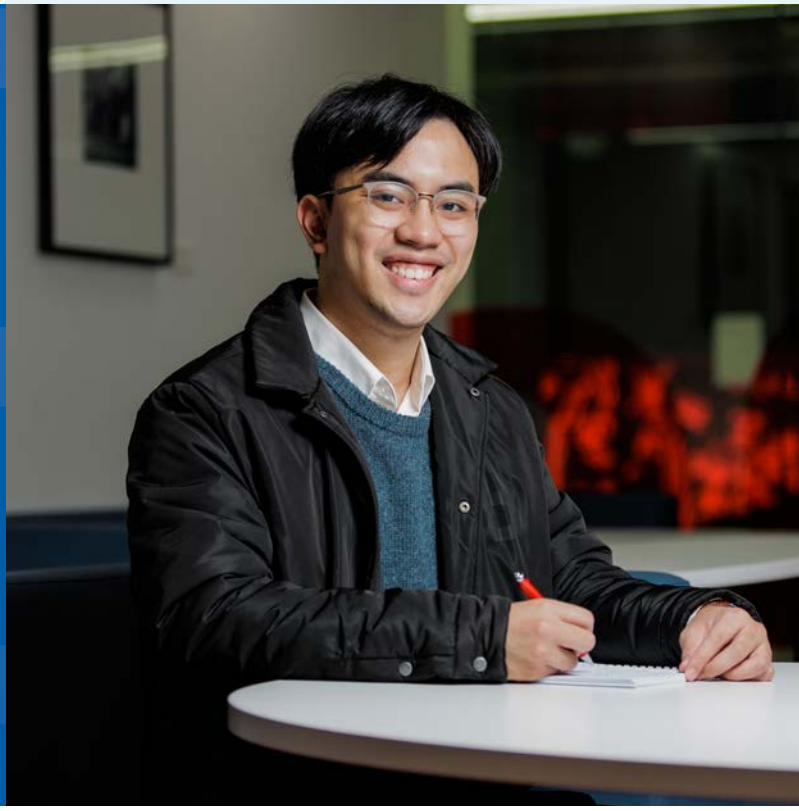
science.auckland.ac.nz/ug-statistics

"I greatly appreciated the fantastic lecturers and staff within the Statistics department. There were plenty of places to ask for answers to any questions that I had during my studies—like chats with lecturers, or the Statistics help room. This always made me feel supported in my learning.

Miguel Antonio

Bachelor of Science and Bachelor of Commerce conjoint majoring in Statistics, Economics and Finance.

Read Miguel's full story at:
science.auckland.ac.nz/miguel-antonio



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