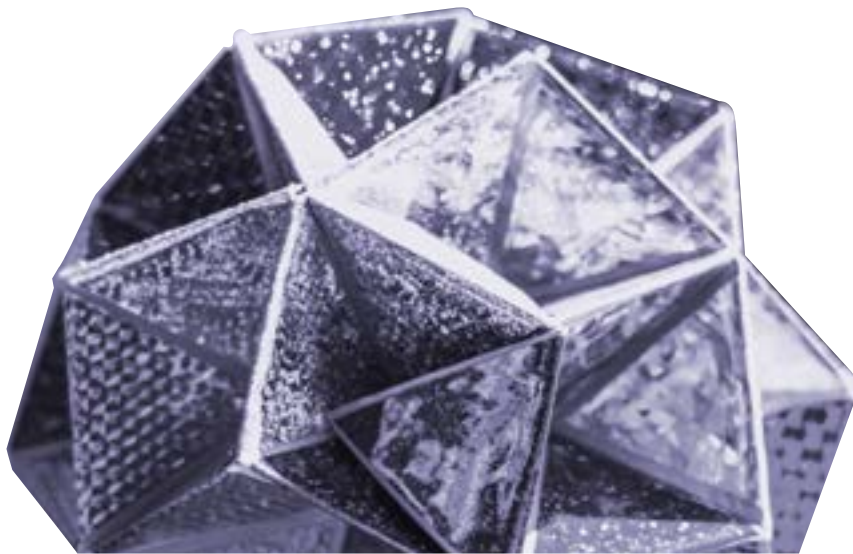


What can I do with a degree in Mathematics?

Mathematics.



Career planning: what do I need to know?

Knowledge of yourself is important for career decision making. Start by looking at your personal goals, abilities, values and interests to explore study and career options that are relevant to you. Some of these may change over time, so it is important to self-reflect and evaluate your career on an ongoing basis.

What do employers look for?

Many employers look for generic skills such as communication, customer-focus, cultural awareness and teamwork. With technology and globalisation changing the nature of society, skills such as resilience, problem solving and adaptability are valuable at work as well as in life.

How can I develop these skills?

- Some skills are developed through your degree
- Extra-curricular activities can help, for example

getting involved in clubs, mentoring, cultural groups, part-time work or volunteering

- Be open to professional and personal development opportunities. Whether it is undertaking an internship, overseas exchange, skills seminar, or joining an industry group – these activities will enhance your employability.

What else should I know?

The career options in this brochure are examples only and the list is not exhaustive. Some careers may require further study beyond a first degree or additional work experience. Some pathways and degrees have a recommended school background. Find more subject details at www.canterbury.ac.nz/subjects/maths

If this brochure does not answer your questions, talking to an expert such as a career consultant can help you to identify the next steps in your career decision making journey.

www.canterbury.ac.nz/careers

What is Mathematics?

Mathematical thought is one of the greatest human achievements and has been around for over 4,000 years. To appreciate mathematics you must transcend beyond bare formulae to understand the ideas that lie behind them.

Mathematics is everywhere and is crucial to our modern lives. For instance, did you know:

- Money is kept safe when you use internet banking by using mathematical cryptography and prime numbers
- Medical images such as an MRI are reconstructed using mathematical tools that were first developed in the early 1800s
- Data compression works via the JPG2000 protocol, which is how almost all photos are stored today, using 'wavelets' to reduce storage space.

The extensive use of computers has led to an increasing demand for statistical and mathematical analysis in many new fields.



AT A GLANCE

180+

maths, stats and data science graduate jobs advertised on SEEK NZ in just six months*

100%

of Maths and Stats graduates that did a research placement as part of their studies said it helped them to get a job**

20k+

20,863 participants in NCEA Level 3 Statistics and Calculus across Aotearoa New Zealand high schools in 2016[^]

* Heath Research Services Ltd for UC, 'An Analysis of Job Advertisements', April-September 2016

** 2013 and 2015 Graduate Destinations Surveys combined

[^] NCEA Annual Report 2016 (www.nzqa.govt.nz)

What skills have UC graduates gained?

Mathematics graduates develop a valuable set of skills that includes:

- Logical and quantitative thinking
- Practical application of mathematics in problem solving
- Numerical confidence
- Computing
- Interpretive and analytical thinking
- Dealing with abstract concepts.

Opportunities to apply your learning outside the classroom are available in this subject, through internships and consulting projects. These experiences deepen your skillset, awareness of others, working knowledge, and employability.

Where have UC graduates been employed?

Destinations for Mathematics graduates are extensive. A variety of organisations in Aotearoa New Zealand have recently hired Mathematics graduates, for example:

- Government eg, The Treasury, Reserve Bank of New Zealand, Government Communications Security Bureau, Ministry of Business, Innovation and Employment, NZ Institute of Economic Research, Wellington City Council

- Banking sector eg, ANZ, Westpac, BNZ, JP Morgan Corporate and Investment Bank, Heartland Bank
- Financial services eg, Russell Investments, NZX Limited, Mercer, Latitude Financial Services, EY, FNZ, KPMG, Optiver Australia, IMC Financial Markets
- Software and technology eg, Xero, Planit Software Testing, Tenzing Management and Technology Consultants, Atlassian, Orion Health
- Insurance eg, Suncorp Group, IAG, Aon, Sovereign
- Electricity, gas, water and waste services eg, Meridian, Transpower, Vector, Mercury
- Market research eg, Colmar Brunton/TNS, UMR Research
- Telecommunications eg, Tait Communications
- Construction eg, Trimble
- Scientific eg, Metservice
- Transport and tourism eg, Air New Zealand, Tourism New Zealand
- Retail eg, Icebreaker, Huffer, Foodstuffs
- Not-for-profits eg, World Vision NZ, Givealittle
- Entertainment eg, Fusion Entertainment, Lightbox, Weta Digital
- Education eg, Education Perfect, St Bede's College, Cashmere High School, University of Canterbury

For more examples of employers who recruit UC students and graduates go to

www.canterbury.ac.nz/recruitingemployers

What jobs and activities do graduates do?

Graduates with this degree are employed in a wide range of jobs. See some examples below.

Note: Some of the jobs listed may require postgraduate study. See the 'Further study' section.

Research mathematician

- Formulates and solves problems
- Develops math theories and techniques
- Provides foundations for applied mathematics

Software / game developer

- Researches the target audience and market
- Writes computer code, sources graphics/effects
- Tests and improves software, fixes issues

Statistical methodologist / analyst

- Plans, designs and tests ways to collect data
- Analyses information to find patterns
- Draws conclusions and writes reports

Data scientist

- Analyses past and current data
- Makes predictions and provides insight
- Links IT experts and business analysts

Research economist

- Analyses economic insight and predicts trends
- Advises organisations or government

Secondary school teacher

- Plans and delivers instructional lessons
- Evaluates performance and provides feedback
- Sets and marks tests and assessments

Financial / business analyst

- Gathers financial information and data
- Uses analytical models to identify trends
- Helps clients plan and solve problems

Retail / category analyst

- Researches pricing, sales and competitor information to identify market opportunities
- Advises how to lower costs and increase profits
- Develops brand/channel marketing strategies

Actuarial analyst

- Assesses the likelihood of an event occurring
- Looks at past trends to predict future outcomes
- Explains implications eg, possible costs

Traffic management planner

- Develops traffic management models and plans
- Conducts studies and analyses the data
- Manages projects and liaises with professionals eg, engineers, architects

Animator

- Creates real-time and cinematic animation and augmented reality content
- Tests animation in game engines and experiments with emerging technologies
- Collaborates with other creatives and developers

Research analyst / associate

- Organises and conducts organisational research
- Uses mathematical modelling and computer software to improve operations, sales etc

Entrepreneur and CEO

- Develops an idea to form their own business
- Gets involved in a start-up

Get started at www.canterbury.ac.nz/careers/Entrepreneurship/getting_started.shtml

UC Careerhub

UC students and alumni can find details of internships, scholarships, job vacancies and employability tips at

www.careerhub.canterbury.ac.nz

What professional bodies can people link to?

As they progress, students and graduates often join professional bodies or organisations relevant to their area of interest. These organisations can provide regular communications and offer the chance to network with others.

- New Zealand Mathematical Society
www.nzmathsoc.org.nz
- New Zealand Association of Maths Teachers
www.nzamt.org.nz
- Australian Mathematical Society
www.austms.org.au
- International Actuarial Association
www.actuaries.org
- Modelling and Simulation Society of Australia and New Zealand Inc. www.mssanz.org.au

Social media networks such as LinkedIn, Facebook and Twitter can provide avenues to keep up-to-date with industry knowledge, networking opportunities, events and job vacancies.

Why do further study and what are my options?

Postgraduate study can facilitate career benefits such as specialist skills, faster progression rate, and advanced research capability. It is important to determine which, if any, further study will help you.

UC offers postgraduate study in Mathematics from honours through to PhD level, which allows more opportunities for research. Advanced study can also lead to an academic career.

Some Mathematics graduates undertake additional training in subjects such as management or teaching.

For UC qualification listings visit www.canterbury.ac.nz/courses

Useful links

UC Careers, Internships & Employment
www.canterbury.ac.nz/careers

UC School of Mathematics and Statistics
www.canterbury.ac.nz/engineering/schools/mathematics-statistics

Careers New Zealand
www.careers.govt.nz

Future in Tech
www.futureintech.org.nz

UC Clubs eg, Mathsoc
www.uksa.org.nz/clubs



Ben Davies



Bachelor of Science in Mathematics and Economics
Studying towards a Bachelor of Science with Honours in Economics and Mathematics
Tutor, University of Canterbury

Why did you choose these subjects?

I find Economics and Mathematics to be genuinely interesting subjects. A strong qualification in the two also acts as a signal of quality to employers. These two factors combined made it a natural choice to study the subjects together.

How did you find the classes?

The classes are a lot more interactive than I expected. You might think a class consists of a lecturer writing down equations for 50 minutes. But instead, they give us examples of interesting problems and ask people for their ideas on how to solve them. It keeps you engaged and motivated to learn.

What are the advantages of activities outside of study?

I was president of the Economics and Finance Society. As part of that we got people to come in and talk about their jobs. We hosted an investment banker and a director from the Institute of Finance Professionals. Hearing from them made me aware of all the different career paths I could take.

How was your internship experience?

I interned at PriceWaterhouseCoopers as an actuarial consultant. My studies had prepared me

well for the data analysis and statistical side of it. But it was the experience of doing it that has given me skills for the professional world. Internships allow you to experience what it's like beyond university.

Looking ahead, what do you want to do?

Economics and Mathematics challenge you to think in ways you haven't before, and to look at the world through a different lens. They provide an analysis toolpack that readies you to solve a wide range of problems in lots of fields.

Everybody wants to change the world but not many know how or the implications of doing so. I want to help people make decisions that shape the world for the better, no matter the scale of the changes they make.

Read more online

Read Ben's full story about his university experience online. UC alumni like Ben make a difference in varied ways around the globe. For stories of graduates who are working in mathematics-related fields visit www.canterbury.ac.nz/profiles

The information in this brochure was correct at the time of print but is subject to change.

More information

UC students seeking study advice.

School of Mathematics and Statistics
Te Rāngai Pūkaha | College of Engineering

The School is made up of specialists in Data Science, Financial Engineering, Mathematics, and Statistics. Courses within the School are able to be studied alongside other subjects and staff invite students to come and discuss their study programme and goals.

T: +64 3 364 2600

E: enquiries@math.canterbury.ac.nz

www.canterbury.ac.nz/engineering/schools/mathematics-statistics

Anyone seeking careers advice.

Careers, Internships & Employment
Te Rōpū Rapuara

CIE offers intending and current students and recent graduates a wide range of services, including individual career guidance, seminars, career resources and student and graduate employment opportunities.

T: +64 3 364 3310

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/careers

[UC Careers Employment](#)

Prospective students seeking study advice.

Student Liaison
Te Rōpū Takawaenga

Student Liaison provides intending students with information about the university system in general and the courses, qualifications, support and facilities available at UC.

Ōtautahi | Christchurch

T: 0800 VARSITY (0800 827 748)

E: liaison@canterbury.ac.nz

Tāmaki-makaurau | Auckland

T: 0800 UCAUCK

E: auckland@canterbury.ac.nz

Te Whanganui-a-Tara | Wellington

T: 0800 VARSITY (0800 827 748) ext 93231

E: wellington@canterbury.ac.nz

www.canterbury.ac.nz/liaison