

What can I do with a degree in Mathematics?

Mathematics.



What is Mathematics?

Mathematics develops a universal language to describe and study different phenomena abstract or occurring in nature, from laws of physics to evolutionary processes in biology.

What distinguishes mathematics from other sciences is the concept of mathematical proof - the most rigorous argument that implies a universal acceptance of the proven fact. Many aspects of the modern life rely on such facts, for example, did you know:

- Money is kept safe when you use internet banking by using mathematical cryptography
- 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.

Studying Mathematics leads to a deeper understanding of science, technology, finance and other applications and provides the tools to develop these areas.

Learn more

It is important to do some research when planning a future career. Speak with, ask questions of, and follow relevant professional bodies, organisations, companies, thought leaders and industry professionals to learn more about:

- Career opportunities, work environments and salary information
- Education and training requirements.

Examples of professional bodies

- New Zealand Mathematical Society
www.nzmathsoc.org.nz
- Te Rōpū Kaiako Pāngarau o Aotearoa New Zealand Association of Maths Teachers
www.nzamt.org.nz
- International Actuarial Association
www.actuaries.org
- Modelling and Simulation Society of Australia and New Zealand Inc.
www.mssanz.org.au

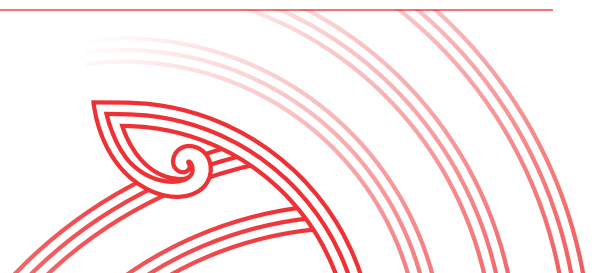
Career and study information

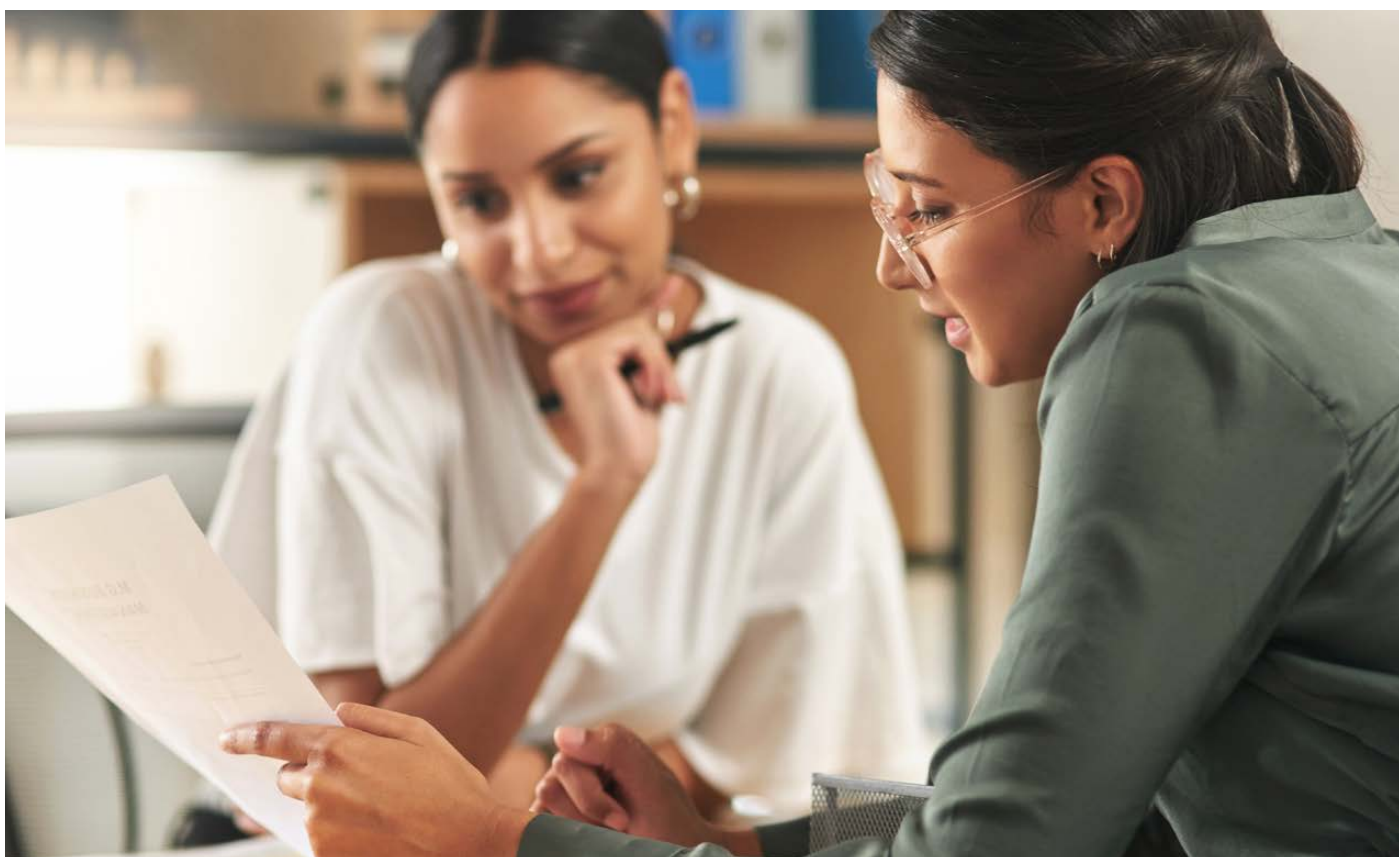
Some study pathways and degrees have a recommended school background, and some careers may require further study beyond a first degree or additional experience.

Gather helpful information from:

- Subject-specific content at
www.canterbury.ac.nz/study/academic-study/subjects/mathematics
- Job profiles on career websites like
www.careers.govt.nz
- Job adverts/vacancy descriptions
- Industry professional bodies.

This resource is part of a set of brochures focused on subject majors; many can also be studied as minors.





What skills can graduates gain?

Through studying a degree in Mathematics, graduates develop a valuable set of skills and competencies that can include:

- Practical application of mathematics
- Problem solving
- Numerical confidence
- Interpretive and analytical thinking
- Critical thinking
- Logical and quantitative thinking
- Technology and computing literacy
- Ability to deal with abstract concepts
- Time management, planning and organisation
- Resilience and adaptability.

What do employers look for?

Many employers look for generic skills such as communication, client/customer-focus, bicultural competence, cultural awareness, teamwork and initiative.

With technology, globalisation, and other drivers changing society, skills such as resilience, problem solving, and adaptability are important.

Skills that are likely to grow in importance include analytical and creative thinking, systems thinking and technological literacy.*

*World Economic Forum: www.weforum.org/agenda/2023/05/future-of-jobs-2023-skills

How can these skills be developed?

- Some skills are gained through studying
- Extra-curricular activities can help, such as getting involved in clubs, mentoring, cultural groups, part-time work or volunteering
- Be open to professional and personal development opportunities, whether it is undertaking work experience, overseas exchange, skills seminar, or joining an industry group.

Where have graduates been employed?

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

- Education e.g. Education Perfect, St Bede's College, Cashmere High School, University of Canterbury
- Banking sector e.g. ANZ, Westpac, BNZ, JP Morgan, Heartland Bank
- Financial services and banking e.g. Russell Investments, NZX, Mercer, Latitude Financial, EY, FNZ, KPMG, Optiver, IMC Financial Markets
- Insurance e.g. Suncorp Group, IAG, Aon
- Market research e.g. Colmar Brunton/TNS, UMR Research

- Scientific e.g. Metservice
- Software and technology e.g. Xero, Planit Testing, Tenzing, Atlassian, Orion Health
- Electricity, gas, water and waste services e.g. Meridian, Transpower, Vector, Mercury
- Telecommunications e.g. Tait Communications
- Entertainment e.g. Wētā FX
- Government e.g. 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
- Construction e.g. Trimble
- Transport and tourism e.g. Air New Zealand, Tourism New Zealand
- Retail e.g. Icebreaker, Huffer, Foodstuffs
- Not-for-profits e.g. World Vision NZ, Givealittle.

What jobs and activities might graduates do?

Graduates with this degree are employed in a range of jobs — see some examples below.

Note: This list is not exhaustive, and some jobs may require further study, training or experience. It is recommended to start with the section 'How can I gain a sense of career direction?'

Data scientist / analyst

- Analyse past and current data
- Make predictions and provide insight
- Link IT experts and business analysts

Research mathematician

- Formulate and solve problems
- Develop math theories and techniques
- Provide foundations for applied mathematics

Software engineer / developer

- Research the target audience and market
- Write computer code, and source graphics/effects
- Test and improve software, and fix issues

Statistical methodologist / analyst

- Plan, design and test ways to collect data
- Develop new analytical methods for data analysis
- Draw conclusions and write reports

Research economist

- Analyse economic insight and predict trends
- Advise organisations or government

Financial / business analyst

- Gather financial information and data
- Use analytical models to identify trends
- Help clients plan and solve problems

Retail / category analyst

- Research pricing, sales and competitor information to identify market opportunities
- Advise how to lower costs and increase profits
- Develop brand/channel marketing strategies

Actuary, actuarial analyst

- Assess the likelihood of an event occurring
- Look at past trends to predict future outcomes
- Explain implications e.g. possible costs

Secondary school teacher

- Prepare and deliver learning experiences in specialised subjects
- Understand the learning needs of rangatahi, observe progress to personalise support
- Promote the wellbeing of rangatahi

Traffic management planner

- Develop traffic management models and plans
- Conduct studies and analyse the data
- Manage projects and liaise with professionals e.g. engineers, architects

Research analyst / associate

- Organise and conduct organisational research
- Use mathematical modelling and computer software to improve operations

Examples of other job titles and careers include:

- Investment analyst / wealth assistant
- Design engineer
- Tester
- Statistician
- Statistical analyst
- Business consultant
- Data modelling analyst
- Academic coordinator
- Lecturer
- Tutor
- Teaching assistant.

Further study options

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.

Further study may facilitate career benefits such as specialist skills, entry into a specific occupation, higher starting salary, faster progression rate, and advanced research capability.

It is important to determine which, if any, further study options align with future career aspirations.

For further UC study options visit:

www.canterbury.ac.nz/study/academic-study

How can I gain a sense of career direction?

Understanding yourself and others is important to gain a sense of direction. This grows with experience; therefore, trying new things and reflecting on an ongoing basis is important.

Career planning checklist

Discover and reflect on:

- Your values, interests, strengths, abilities, and aspirations
- Your connection to whānau, people, and places
- Lifestyle preferences and location
- The skills you want to gain, use, or enhance

Engage in a variety of experiences to learn about:

- How you want to contribute to society, the environment, and global challenges
- The tasks, responsibilities and work environments you prefer
- Your work values, priorities and interests

Learn more and gather career and study information

(refer to page one of this resource)

- Speak with people working in careers that interest you; check the realities of a job/career
- Gather information from various sources

Identify your next steps

- Talking to a career consultant can help you to identify your next steps. Visit: www.canterbury.ac.nz/life/jobs-and-careers



What have other students and graduates done?

Explore career stories of students' university experiences and UC alumni who make a difference globally in varied ways.

Visit: www.canterbury.ac.nz/about-uc/why-uc/our-students/student-stories



Tessa



Caleb

Tessa

Senior Business Analyst, Oranga Tamariki
Past role: GovTechTalent Graduate Programme
Bachelor of Science Honours in Mathematics
Bachelor of Arts in Te Reo Māori and Māori and Indigenous Studies

What do you do in your current role?

I collate and analyse data and information to support iwi and Māori partners with the mahi they do for tamariki and whānau.

How has your study prepared you for this opportunity?

My maths degree provided me with the solid analysis experience and critical thinking ability I need to understand all aspects of the data I work with. The multidisciplinary maths projects I worked on showed me how to apply and translate maths across different contexts. I gained as much creativity as I did logic and reasoning from the variety of maths courses I did, and that is very much reflected in the way that I approach my analysis work now.

What advice would you give students currently studying mathematics?

Take advantage of the range of maths courses and projects on offer - maths is a super broad field so it is worth giving anything a bit of a go to find your niche.

Caleb

Senior Analyst Programmer, Te Whatu Ora | Health New Zealand
Bachelor of Science in Mathematics and Statistics

What did you most like about your studies?

UC has a diversity of students, majoring in different subjects, so there are many personalities. I really enjoyed interacting with people different from me.

I had no experience in coding before taking STAT221, and it really encouraged me to explore, think and learn in a different way.

What UC activities did you get involved in?

Being part of the large CMSA club gave me so much warmth, to be around with people of familiar tongue and culture. It was often a relief to hang out with them once in a while. Malam Malaysia, one of the largest events of CMSA, always brought people closer to each other.

How did UC prepared you for the world of work?

I found myself a more capable and mature person. More importantly, I can now face my weaknesses. If it was not for studying abroad, I would not have had the change to.

Also, I was blessed enough to receive academic rewards from UCIC and UC, as a recognition of high achievements.

Career guidance

Career services are available for future and current students, and recent graduates. To learn more, contact:

Te Rōpū Rapuara | Careers

T: +64 3 369 0303

E: careers@canterbury.ac.nz

www.canterbury.ac.nz/life/jobs-and-careers

Helpful career insights

- Speaking with employers is key to finding opportunities; not all jobs are advertised
- Developing an online presence is useful as employers can search for future employees online
- Learning about recruitment patterns and where to find opportunities is important.

Study advice

Student Advisors at UC help with questions focused on starting, planning and changing studies. To connect with Student Advisors, visit:

www.canterbury.ac.nz/study/study-support-info/study-support

Future students – contact:

The Future Students team

T: 0800 VARSITY (0800 827 748)

E: futurestudents@canterbury.ac.nz

First year students – contact:

Kaitoko | First Year Student Advisors

T: +64 3 369 0409

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