

# What can I do with a degree in Financial Engineering?

# Financial Engineering.



## 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, bicultural competence, 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/financial-engineering](http://www.canterbury.ac.nz/subjects/financial-engineering)

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](http://www.canterbury.ac.nz/careers)

## What is Financial Engineering?

Want to understand the complexity of capital markets? Or how to manage different types of risks? Interested in achieving a challenging technical degree with flexible career opportunities?

Financial Engineering is a cross-disciplinary field combining financial and economic theory with the mathematical and computational tools needed to design and develop financial products, portfolios, markets, and regulations. Financial engineers manage financial risk, identify market opportunities, design and value financial or actuarial products, and optimise investment strategies.

Initial studies provide a breadth of technical skills and knowledge across finance and economics, mathematics and statistics, and computer science and software engineering. Later on in their degree, students can specialise.



## AT A GLANCE

1<sup>st</sup>

Aotearoa New Zealand's first university to offer Financial Engineering programmes

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stock exchanges in the world that are a part of the "\$1 Trillion Club" and have a market capitalisation of over US\$1 trillion each

\$100k—  
\$150k

is the salary range for a qualified and experienced actuary\*

## What skills will UC graduates gain?

Financial Engineering graduates develop a valuable set of skills that include:

- Applied financial, mathematical and statistical problem-solving skills
- Strong quantitative and analytical abilities
- Programming skills
- Ability to critically review new information
- Ability to design and develop a new financial product, instrument or investment strategy
- Communication
- Teamwork.

## Where might graduates be employed?

There is currently an employer demand and international growth in financial engineering and related fields like the wider actuarial and business analytics industries.

Employers range from private industries, such as banking, investment, capital industries, security, data analysis, risk management and insurance, to the public sector (eg, the Reserve Bank, Treasury or regulatory bodies).

Past graduates of the contributing departments from related paths of study have been employed by Macquarie Capital, Deloitte, BNY-Mellon, First NZ Capital, Reserve Bank of New Zealand, Vero Insurance, Wynyard Security Group and many government agencies such as the Treasury, Statistics New Zealand and the Ministry of Business, Innovation and Employment.

With global demand increasing apace, there are significant opportunities for New Zealanders to work abroad as a financial engineer.

## What jobs and activities could graduates do?

Financial Engineering graduates are ready for the international workplace in the finance and analytics industries. Financial engineers could be involved in derivatives pricing, financial regulation, corporate finance, portfolio management, risk management, trading or structured products.

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

Examples:

### Financial engineer

- Keeps abreast of current financial markets and theories, and past market performances
- Develops simulations and predicts behaviour
- Uses modelling to decide on saving, investing, borrowing, lending, and managing risk

### Investment broker, investment trader, share broker, financial trader, quant trader

- Develops systems, algorithms, relationships and strategies to maximise assets and minimise financial risk
- Specialises in stock, bond or other markets
- Makes investment transactions and may offer advice to a client or organisation

### Actuary

- Assesses the likelihood of a particular event occurring and the possible financial costs
- Looks at past trends to predict future outcomes
- Presents reports, explains implications, and gives advice (often to non-specialists)

### Investment analyst

- Does fundamental analysis for securities
- Provides buy or sell recommendations

### Quantitative research analyst

- Develops automated trading strategies
- Implements statistical trading models
- Generates research ideas, builds datasets, conducts statistical data analysis

### Risk analyst / manager

- Identifies and manages strategic, operational and other (eg, credit or regulatory) risks
- Develops and maintains risk management policies, procedures, and frameworks
- Oversees engagement and compliance, and supports staff in managing risks

### Business analyst

- Utilises data and analytical models for organisational information purposes
- Provides insight to inform business decisions
- Liaises with different areas of the business

### Statistical analyst, data scientist

- Collects, analyses and interprets data
- Uses statistical techniques and models to identify and forecast results, trends and needs
- Presents information to assist decision-making

### Entrepreneur & self-employment

Entrepreneurship and innovation are an increasing part of the working landscape. Through generating a business idea, or getting involved in a start-up/business venture, you have the potential to create a work opportunity that aligns with your knowledge, skills, values and risk profile. To get started on how to establish, run and grow a new business, go to Te Pokapū Rakahinonga, Centre for Entrepreneurship at the University of Canterbury [www.canterbury.ac.nz/uce](http://www.canterbury.ac.nz/uce)

## What professional organisations can I engage with?

Connecting with professional bodies and organisations can help you to establish professional networks and learn more about different career options in your area of interest. Gaining valuable insight into a profession can assist in making informed career decisions.

- The New Zealand Data Science and Analytics Forum  
[www.analytics.org.nz](http://www.analytics.org.nz)
- International Association for Quantitative Finance [www.iaqf.org](http://www.iaqf.org)
- Financial Engineering and Banking Society  
[www.febsociety.org](http://www.febsociety.org)
- New Zealand Society of Actuaries  
[www.actuaries.org.nz](http://www.actuaries.org.nz)
- Transforming Data with Intelligence  
<https://tdwi.org/>
- Institute of Analytics Professionals of Australia  
[www.iapa.org.au](http://www.iapa.org.au)

Having a professional presence on social media networks such as LinkedIn and Facebook can help you to keep up to date with important industry developments and trends, networking opportunities, events and job vacancies. Following relevant professional bodies, organisations, companies and thought leaders is a great way to gain a deeper awareness of the industries that interest you. Social media presents an opportunity to build and enhance networks as well as to display your involvement in projects and any academic successes.

## Why do further study and what are my options?

Postgraduate study can 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 will help you in your future career.

UC offers an honours programme and a Master of Financial Engineering for graduates to conduct higher research and learning in the subject. Visit [www.canterbury.ac.nz/courses](http://www.canterbury.ac.nz/courses)

### Useful links

- Te Rōpū Rapuara UC Careers  
[www.canterbury.ac.nz/careers](http://www.canterbury.ac.nz/careers)
- Careers New Zealand  
[www.careers.govt.nz](http://www.careers.govt.nz)



## Nicholas



Bachelor of Science in Financial Engineering and Statistics  
Bachelor of Science with Honours in Computational and Applied Mathematical Sciences  
Research Assistant, Te Pūnaha Matatini

### What attracted you to Financial Engineering?

The wide range of courses in the Financial Engineering degree was the biggest draw. I knew I wanted to study some form of mathematics/statistics at university, and Financial Engineering allowed me to tie in some Computer Science, Finance, and Economics. The Statistics major followed naturally as it strengthened the quantitative aspect of my degree.

It provides an awesome range of subjects that I couldn't get any other way. They all relate to each other more than I expected. Taking the courses in this way provides insights you wouldn't have if you just took one subject. This means you have to cover a lot of background material to stay up-to-date in all subjects.

### Tell us about some of the skills you used in your work experience:

We used techniques learned in econometrics and data mining to help World Vision plan and allocate their time in schools more effectively. Using tools from class in the real world allowed us to truly understand how our theoretical knowledge is actually applied to real problems.

### What did you do during your PACE course in Thailand?

Here I worked in a small (but rapidly growing) business, using my statistical, machine

learning, and computer science knowledge to automate internal report generation. This saved them significant time as they no longer needed to hand-prepare these reports. There was also the opportunity to introduce some more "intelligent" systems, such as internal connection suggestions, to keep them ahead of their competition.

### How has your study been useful out in the field?

Employers in the financial sector are usually looking for strong quantitative skills. Taking a double major with Financial Engineering and Statistics (or Mathematics) is pretty ideal.

### Read more online

Read more stories about our students' university experiences online. UC alumni make a difference in varied ways around the globe. To find out where graduates are now visit [www.canterbury.ac.nz/getstarted/whyuc/student-profiles](http://www.canterbury.ac.nz/getstarted/whyuc/student-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.

Te Kura Pāngarau |  
School of Mathematics and Statistics

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 3 369 2233

E: [enquiries@math.canterbury.ac.nz](mailto:enquiries@math.canterbury.ac.nz)

[www.canterbury.ac.nz/engineering/schools/mathematics-statistics](http://www.canterbury.ac.nz/engineering/schools/mathematics-statistics)

### Anyone seeking careers advice.

Te Rōpū Rapuara | UC Careers

UC 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 3 369 0303

E: [careers@canterbury.ac.nz](mailto:careers@canterbury.ac.nz)

[www.canterbury.ac.nz/careers](http://www.canterbury.ac.nz/careers)

### Prospective students seeking study advice.

Te Rōpū Takawaenga | Student Liaison

The liaison team provide advice to future students who are starting their degree for the first time. They can assist with information on degrees, scholarships, accommodation, and other aspects of university life. We have offices in Christchurch, Auckland and Wellington.

Ōtautahi | Christchurch

T: 0800 VARSITY (0800 827 748)

E: [liaison@canterbury.ac.nz](mailto:liaison@canterbury.ac.nz)

Tāmaki Makaurau | Auckland

T: 0800 UCAUCK

E: [auckland@canterbury.ac.nz](mailto:auckland@canterbury.ac.nz)

Te Whanganui-a-Tara | Wellington

T: 0800 VARSITY (0800 827 748)

E: [wellington@canterbury.ac.nz](mailto:wellington@canterbury.ac.nz)

[www.canterbury.ac.nz/liaison](http://www.canterbury.ac.nz/liaison)

