

# Mathematics and Statistics

Never Stand Still

Science





## Mathematics and Statistics

The School of Mathematics & Statistics empowers discovery through creative human thought, ranging from pure abstractions to real-world applications.

As Australia's largest and highest ranked school of mathematics & statistics, we provide comprehensive coverage of modern mathematics, underpinned by leading teaching and research. Our connections with industry provide students with experience of important practical applications of their learning, and industry with the mathematical insights of our talented students. We have links with many leading organisations such as the Roads and Maritime Services, CommBank and SIRCA.

We are proud to be the home of many leading mathematicians including Fellow of the Royal Society, Trevor McDougall, and past President of the International Council for Industrial and Applied Mathematics, Ian Sloan.

## Undergraduate Studies in Mathematics and Statistics

### Bachelor of Science (Advanced Mathematics) (Honours)

**UAC Code: 429300 / UNSW Program Code: 3956**

The Advanced Mathematics degree is aimed at high achieving students who wish to specialise in mathematics as a basis for the increasing range of quantitative careers in areas such as finance, environmental modelling and research. This four-year degree combines advanced coursework with an Honours-level research project in one of the available plans of study. UNSW offers mathematics students advanced facilities combined with innovative teaching. This program has been designed to cater for the specific abilities and interests of talented students with a superior ATAR.

Approved majors in the Bachelor of Science (Advanced Mathematics) (Honours) program are:

#### Applied Mathematics

The development and implementation of methods to understand and predict real world problems and improve their outcomes. Mathematical methods and models are employed to find solutions not only for technical and industrial problems, but also for social, biomedical and economic problems.

#### Pure Mathematics

The foundation of all Mathematics. It is concerned with discovering the patterns and structures that underlie wide areas of Mathematics. Although motivated more by a search for beauty and symmetry, this area of Mathematics has led to major advances in many areas of science and technology.

#### Advanced Statistics

The methodology for drawing conclusions from data - estimating the present, predicting the future and making decisions in the face of uncertainty. Modern Statistics is a rapidly evolving science in which revolutions in technology present exciting new opportunities for collection and analysis of huge and complex data sets.

#### Quantitative Risk\*

A new industry sponsored degree, responding to the recent strong demand for specialists in bank risk. It is closely related to actuarial studies, but specialises in bank risk while actuarial studies specialises in insurance risk.

*\*Enrolment in the Quantitative Risk major requires permission from the Head of School of Mathematics and Statistics.*

Mathematics/Advanced Mathematics can also be studied within the following degree programs, amongst others:

Program	UAC Code	UNSW Program Code	Length of Study	Entry Requirements
Bachelor of Science	429000	3970	3 years full time	2017 Guaranteed Entry: 85.00 IB: 31 or equivalent
Bachelor of Advanced Science (Honours)	429350	3962	4 years full time	2017 Guaranteed Entry: 96.00 IB: 37 or equivalent
Bachelor of Science (Advanced Mathematics) (Co-op Program)	429300	3956	5 years full time	2017 minimum ATAR: 96.00 Application: coop.unsw.edu.au
Bachelor of Advanced Mathematics (Honours) / Actuarial Studies	424350	3589	5 years full time	2017 Guaranteed Entry: 97.50 IB: 34 or equivalent
Bachelor of Science (International)	429420	3987	4 years full time	2017 Guaranteed Entry: 88.00 IB: 32 or equivalent
Bachelor of Science and Business	429100	3925	3 years full time	2017 Guaranteed Entry: 90.00 IB: 34 or equivalent
Bachelor of Science / Engineering	425850	3767	5 years full time	2017 Guaranteed Entry: 92.00 IB: 34 or equivalent
Bachelor of Science / Computer Science	425800	3983	4 years full time	2017 Guaranteed Entry: 92.00 IB: 34 or equivalent

## Career Opportunities

Mathematics and statistics graduates work in a huge variety of areas, wherever logical skill and analysis of quantitative data is needed to provide accurate and timely answers.

- Data Forensics/Fraud Detection** – analysing patterns in large data sets to find the “needles in the haystack” of fraudulent or terrorist activity.
- Environmental Modelling** – understanding of massive computer models that predict changes in weather, climate and ocean currents.
- Biostatistics** – securing public health and testing drugs and new procedures for safety and efficacy, using statistical inference.
- Cryptography** – encoding and decoding signals within financial markets, the internet and the military, as well as numerous other applications.
- Quantitative Risk** – monitoring the risk positions of banks in light of changing market conditions as well as credit and operational profiles.
- Game Design** – designing complex games to ensure correct probabilities and accurate simulations.
- Data Management** – ensuring accuracy and accessibility of organisations' data warehouses.
- Teaching** – inspiring the new generation with an understanding of the power of mathematics.
- Research** – answering the many abstract questions thrown up by other sciences and by mathematics itself.

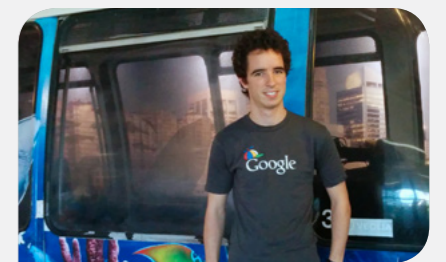
Graduates of Mathematics and Statistics are employed by a wide range of companies and organisations including Google, CSIRO, The Reserve Bank, The Australian Bureau of Statistics, Goldman Sachs, Commonwealth Bank, Telstra, and universities throughout the world.

For further information on careers within Mathematics and Statistics, visit our careers page on [maths.unsw.edu.au/futurestudents/careers](https://maths.unsw.edu.au/futurestudents/careers).

## Student Testimonials

My first reason for choosing to study mathematics at UNSW was because of the quality and diversity of the faculty, which is one of the largest and most respected in Australia.

This has given me the opportunity to study mathematics at a very high level over a broad range of fields. Secondly, a mathematics degree at UNSW has given me a lot of flexibility with what I have wanted to study. This allowed me to extend myself with higher levels of mathematics, as well as to study courses outside of mathematics which I have found interesting. The quality and flexibility of the degree has meant that I have had a diverse range of opportunities available to me as I near the completion of my degree. I personally considered options ranging from corporate careers in finance or management consulting to further postgraduate study in mathematics, before choosing a technical role in software engineering at Google.



**Anthony Morris**  
Bachelor of Science (Advanced Mathematics) – Hons Pure Mathematics

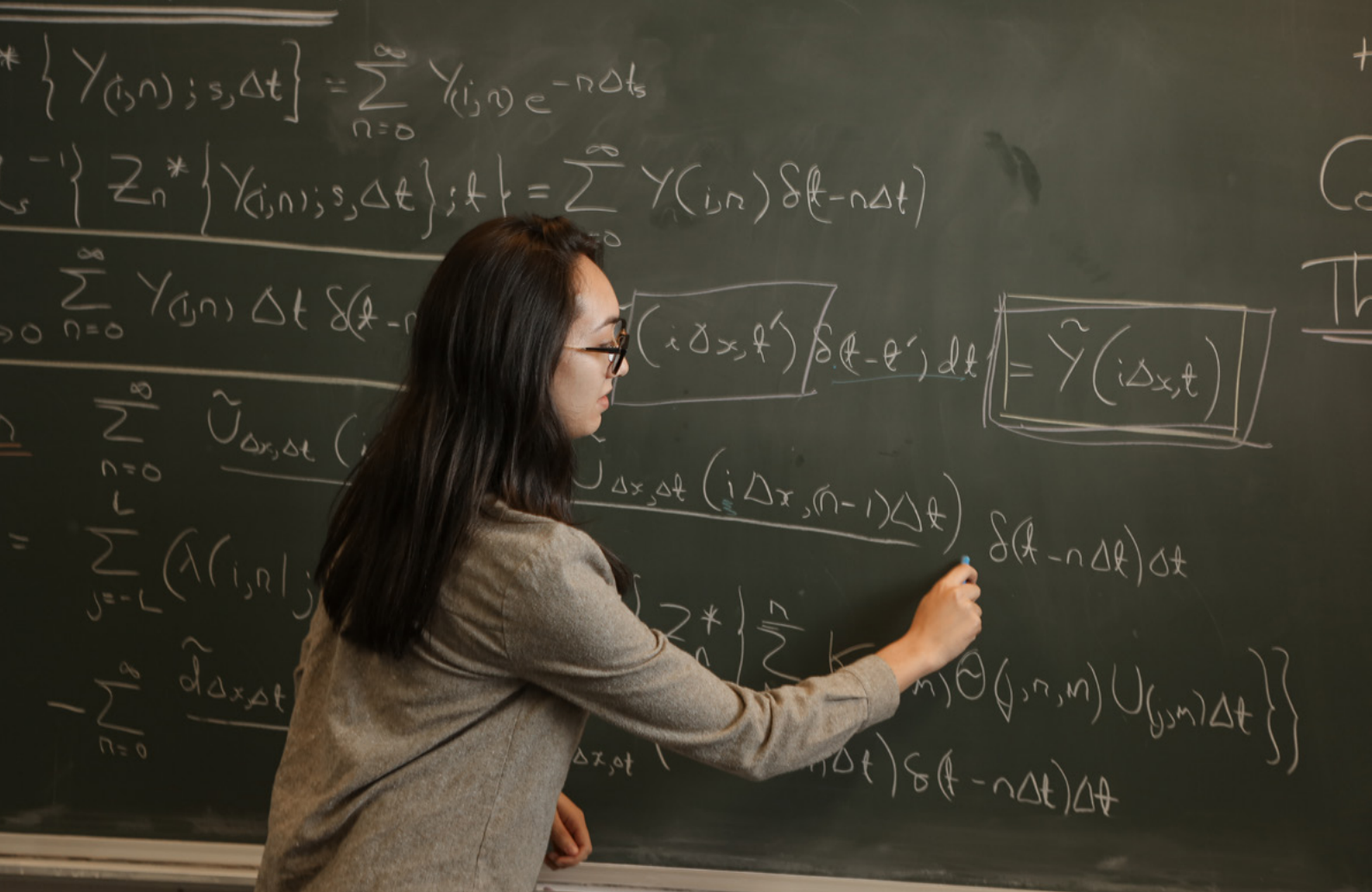


**Jessica Egan**  
Bachelor of Science (Advanced Mathematics) – Hons Pure Mathematics

In my first few years of studying mathematics at UNSW the classes were huge. I enjoyed the company of not only potential mathematicians, but also potential physicists, engineers and computer scientists, among others. They all needed mathematics in the beginning. It didn't take too long for me to realise that I didn't just need to study mathematics; I wanted to. In later years, the classes shrunk and I developed a strong relationship with a small group of mathematically minded people.

The study of mathematics is so very diverse. A single problem can be challenging, inspiring, humbling, uplifting and fun; all at the same time. I majored in Pure Mathematics, but studied a few applied and statistical subjects as well. On the side, I filled my electives with computing subjects. I loved how interrelated it all was – how my study in one subject enriched my understanding of another.

I now work as an Actuarial Analyst at Taylor Fry Consulting Actuaries, and I am an Associate member of the Institute of Actuaries Australia. I'm excited to have found a niche of mathematically minded people in the workforce, as I did at UNSW."



## School Contact Details

### School of Mathematics and Statistics

UNSW Australia  
The Red Centre, Centre Wing  
Sydney NSW 2052

**Tel:** +61 2 9385 7111

**Email:** [ug.mathsstats@unsw.edu.au](mailto:ug.mathsstats@unsw.edu.au)

**Website:** [maths.unsw.edu.au](http://maths.unsw.edu.au)

**Facebook:** UNSW Mathematics and Statistics



## Science Marketing

### Science Student Centre

Room 128 Robert Webster Building  
UNSW Australia  
Sydney, NSW Australia 2052

**Tel:** +61 2 9385 7788

**Fax:** +61 2 9385 4051

**Email:** [studyscience@unsw.edu.au](mailto:studyscience@unsw.edu.au)

**Website:** [science.unsw.edu.au](http://science.unsw.edu.au)

## Connect With Us



[facebook.com/unswscience](https://facebook.com/unswscience)



[twitter.com/unswscience](https://twitter.com/unswscience)



[@unswscience](https://www.instagram.com/unswscience)



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