



UNSW
SYDNEY

Master of Data Science and Decisions

A global career at the forefront of Big Data.



Become the problem solver.

We now live in the Big Data Era. Data is collected everywhere and in immense detail. Our world contains an unimaginably vast amount of digital information. Extracting meaning from this data can drive business forward, enable next-generation scientific breakthroughs and produce benefits that make a positive difference in our world. But it is a challenging task which requires strong skills and training.

Data Scientists are the people with that expertise, which explains why they have become key players in today's job market.

Prepare yourself for excellent employment opportunities in this fast-growing area with UNSW's Master of Data Science and Decisions. From industries as varied as health, defence, finance, transport and logistics, to agriculture, media and technology, there is a growing reliance on data science professionals to deliver meaningful business insights.

The UNSW Master of Data Science and Decisions gives you broad expertise within the data science framework. You'll consolidate your skills across three key areas: mathematics and statistics; computer science; and economics; thus enhancing your value in the workplace.

You'll become the problem-solver who can address business challenges across the spectrum of an organisation.

This postgraduate degree is taught by leading minds from UNSW's award-winning School of Mathematics & Statistics in the Faculty of Science, the School of Computer Science in the Faculty of Engineering and the School of Economics in the Faculty of Business. At our diverse and inclusive campus, you will build valuable relationships with academics and your student peers.

UNSW's Master of Data Science and Decisions will place you directly on the path to great employment opportunities and salary potential in tomorrow's workforce.

Dr Gery Geneens

Director Postgraduate Studies,
School of Mathematics & Statistics



Tomorrow's business is built on data.

As the 'Big Data' boom rolls on, your skills will be central to a range of roles in information-rich industries including internet search, fraud detection, targeted advertising, logistics planning, speech recognition, image analysis, genetic risk prediction, virtual reality, customer loyalty, product development and autonomous vehicles. There are many more awaiting development in the future!

You only have to look at the large number of employment opportunities for Data Scientists advertised on a daily basis and the generous salary these roles command to see the growing demand in this field. Data Scientist has held the #1 job ranking (US) for the last three years for number of job openings, salary and overall job satisfaction.

Specialise across three key pillars



Statistics



Computer Science



Economics

Who is the Master of Data Science & Decisions for?

Graduating STEM students

If you've recently graduated with a Bachelor of Mathematics; a Bachelor of Science (mathematics, statistics or computer science major); or a Bachelor of Data Science and Decisions; this degree is a great next step on your professional journey.

Computer Science, Statistics or Business Analytics professionals

If you have industry experience in one of these areas, expand your skills and knowledge to put yourself in a winning position. You'll be a highly valued employee as you will speak everyone's language and provide effective communication across diverse teams.

Program Outline

Masters level requires 96 Units of Credit (UoC) for completion.

You can choose to exit at Graduate Certificate level (24 UoC) or Graduate Diploma level (48 UoC).

Elective courses

6 Units of Credit each.

Database Systems

This course will teach you data modelling, principles of database design, data manipulation languages and database application techniques. It also includes an introduction to DBMS internals and advanced databases. In the lab you'll learn the design and implementation of a database application using SQL and stored procedures.

Data Visualisation

An introduction to statistical and visualisation tools for the exploratory analysis of data. You'll learn what makes an effective data visualisation and how to create interactive data visualisations. There will be a strong focus on developing storytelling skills where you'll learn to combine data, its visualisation and a narrative to create a powerful story to drive change.

Fundamentals of Data Science

A broad overview of Data Science in the modern world. You'll study the fundamentals of Data Science as it is applied in Computer Science, Economics and Mathematics and Statistics. This course will cover topics such as databases, data analytics, data mining, Bayesian statistics, statistical software, econometrics, machine learning and business forecasting.

Business Economics

An introduction to economic analysis and policy, in particular decision-making in business. You'll learn tools to use economic principles in decision-making and gain an understanding of the broader economic environment in which business decisions are made.

Economics of Strategy

This course covers the fundamentals of Game Theory and its applications. Game Theory is a revolutionary way of analysing strategic interactive situations. It is crucial to the understanding of market competition among large firms, the designing of incentive contracts, bidding at auctions, bargaining, and other similar problems central to economics and business.

Multivariate Analysis

This course offers a methodological background in Multivariate Analysis as a backbone of Applied Statistics. It introduces multivariate techniques including principal component analysis; canonical correlation analysis; cluster analysis; factor analysis and discriminant analysis.



Statistical Inference

This course presents general inference theory based on maximum likelihood and Bayes methods. Estimation, confidence set construction and hypothesis testing are discussed within a decision-theoretic framework.

One of the following:

Foundations of Computer Science

Topics include an Introduction to set and relation theory; Propositional logic and boolean algebras; Induction, recursion and recurrence relations; Discrete probability; Graph theory; and Trees for algorithmic applications.

Or

Principles of Programming

This initial programming course provides an introduction to programming in Python and covers essentials including Program design and implementation in a high-level language; Fundamental programming techniques, data structures and algorithms; and Debugging and testing.

One of the following:

Machine Learning and Data Mining

Machine learning (ML) is the algorithmic approach to learning from data. This course provides an introduction to core ideas and techniques, covering theoretical foundations, algorithms, and practical methodology. Undertake hands-on experience on applying ML algorithms to real problems and datasets.

Or

Data Mining and its Business Applications

Increasingly, organisations need to analyse enormous data sets. In response to this, a range of statistical methods and tools have been developed to allow accurate and quick analysis. You'll learn how to choose the right data mining tool for your data. Case studies of industry-based data mining projects will provide real-world insight and the most up to date data mining software is used to illustrate the methods.

Specialisations

You will choose from one of the following specialisations.

24 UoC each

Computational Data Science and Decisions

Specialise further in computational methods to manipulate, understand and predict data.

Behavioural Data Science and Decisions

Specialise further in interpreting, understanding and predicting data for use in business.

Business Data Science and Decisions

Specialise further in methods of interpreting, understanding and predicting data for use in business.

Quantitative Data Science and Decisions

Specialise further in mathematical and statistical methods to interpret, understand and predict data.

Prescribed electives

Choose 6 UoC from other specialisations.

What makes us different

> **UNSW School of Mathematics & Statistics - #2 in Australia QS 2020 Subject Rankings**



Awarded the maximum QS Five Star Plus rating in 2019



#1 institution attended by Australian startup founders
Startup Muster 2018



43rd in the 2020 QS World University Rankings



Member of the prestigious Group of Eight



27th in the world for employer reputation
2020 QS Graduate Employability Rankings



When

- From Term 1, February 2021.
- 2 years full-time
- May also be taken part-time



Where

UNSW Kensington campus

Ready to take the next step?

Contact us at futurestudents@unsw.edu.au with Master of Data Science and Decisions in the subject line.

Call us on 1300 864 679.

We can make an appointment for you to talk with a course specialist.

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