What can I do with a degree in
Data Science?

Data Science.

What is Data Science?

We live in a world where the data that we generate is growing exponentially and increasing in complexity day by day. The storage, maintenance, and analysis of data is important for organisations who are accumulating data faster than they can process effectively.

Data science enables organisations to extract meaningful insights from data, make informed decisions, problem-solve, personalise experiences, detect fraud, advance healthcare and research, optimise processes and more. These advantages make data science an essential discipline for businesses and industries across various sectors.

Data science is a profession that draws from mathematics, statistics, and computer science and covers topics such as algorithms, statistical modelling and scalable computing, and topical issues such as data ethics and security.

Those working in data science are at the forefront of technical innovation, developing and implementing new techniques for data analysis and decision-making.

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

- The NZ Data Science + Analytics Forum ⌨ www.analytics.org.nz
- The New Zealand Statistical Association ⌨ www.stats.org.nz
- NZ Tech ⌨ www.nztech.org.nz
- Transforming Data with Intelligence ⌨ https://tdwi.org
- Institute of Analytics Professionals of Australia ⌨ www.iapa.org.au
- Data Science Association ⌨ www.datascienceassn.org

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/data-science
- 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.
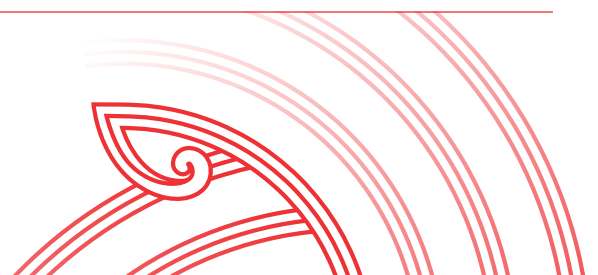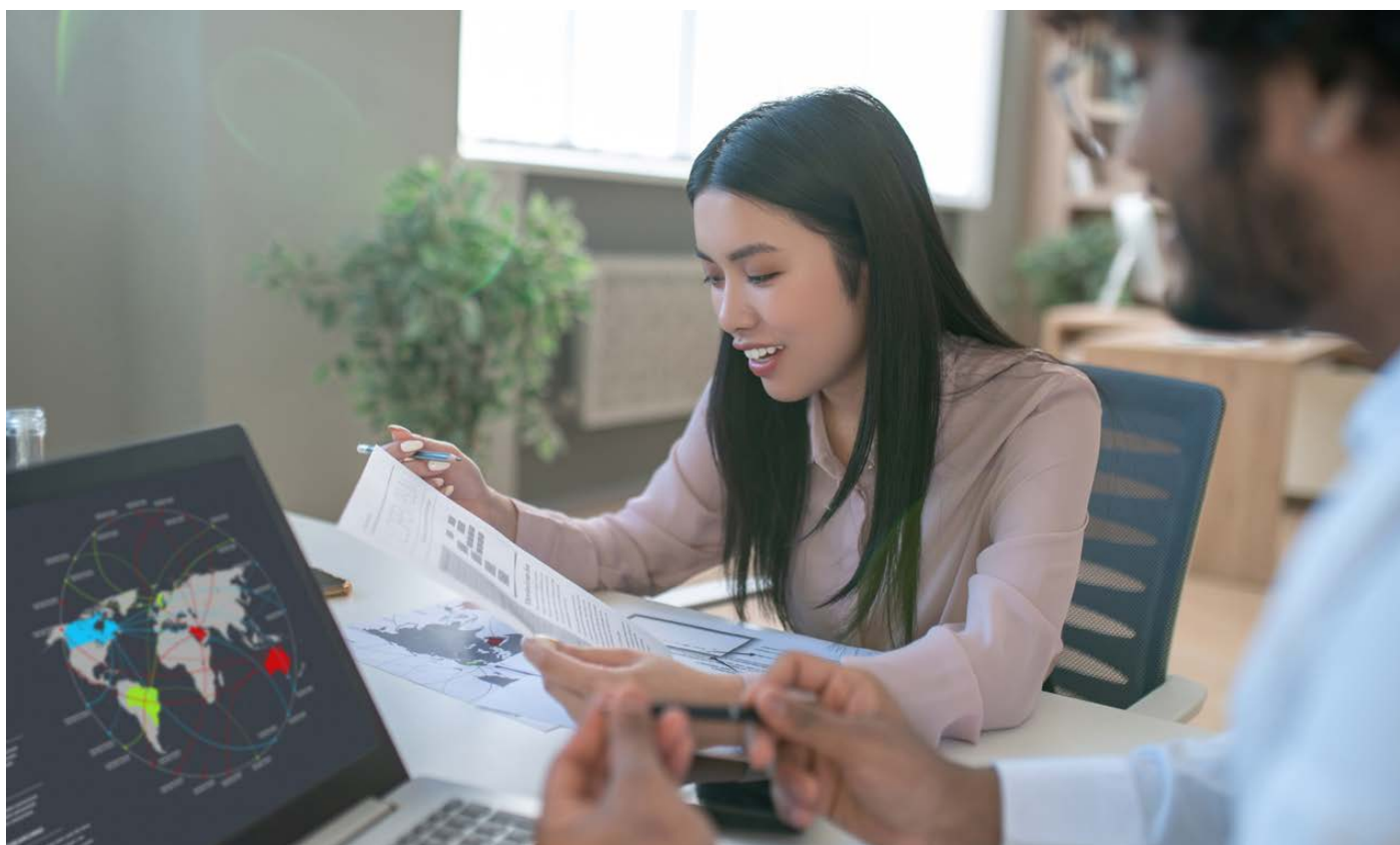
What skills can graduates gain?

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

- An understanding of mathematics, statistics, computer science, and business intelligence techniques
- Algorithm design and programming
- Database software knowledge
- Numerical confidence
- Problem solving
- Technology literacy
- Analytical and critical thinking
- Willingness to learn
- Time-management, planning and organisation
- Oral and written Communication.

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?

Data Science graduates are employed in a range of industries. Graduates have gone on to work in:

- Technology companies
- Consulting and research firms
- Public administration, safety and support services
- Agriculture, forestry and fishing
- Construction and infrastructure
- Healthcare and education
- Manufacturing, retail, transport and warehousing
- Not-for-profit sector
- Government and public bodies e.g. regional councils, Ministry of Health, New Zealand Police, Department of Internal Affairs, Ministry of Business, Innovation and Employment, Ministry of Education, Ministry of Justice, Stats NZ.

Many employment opportunities exist with organisations that run large computer-based systems, such as finance companies, government departments, state-owned enterprises, consulting companies, and computer organisations themselves. Graduates also start up their own software companies and end up being employers rather than employees.

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
- Analyse complex data to propose business solutions
- Use advanced technology and statistical tools

Database administrator, data coordinator
- Use specialist software to organise and maintain a secure database

Data analyst, data specialist
- Translate numbers and data to solve problems
- Produce accessible graphs, charts, tables and reports

Data engineer
- Design, build and maintain infrastructure required for data storage, processing, and retrieval
- Solve complex data engineering problems

Data visualisation analyst
- Produce graphic representations of data for use by data experts and organisation leaders

Business analyst, data reporting analyst
- Analyse data, processes and systems
- Provide insight to assist with strategic and operational decisions
- Liaise with different business functions

System analyst
- Analyse systems, identify requirements, and propose solutions for improving system functionality and performance

Product manager
- Analyse user feedback to inform design
- Ensure product is made efficiently using latest technologies

Intelligence advisor, information / insights analyst
- Assess needs, gather and analyse information for strategic guidance
- Monitor intelligence for decision-making and risk mitigation

Technical / project analyst
- Utilise data and analytical models for technical or project decisions
- Liaise with different project personnel

Statistical methodologist / analyst
- Plan, design and test data collection methods
- Analyse information to find patterns
- Draw conclusions and write reports

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

Risk surveyor / analyst
- Identify and mitigate strategic, operational, and other risks e.g. credit or regulatory risks
- Manage relevant policies and procedures
- Oversee staff engagement and compliance

Examples of other job titles and careers include:
- Asset data analyst
- Analyst developer
- Analytics specialist
- Asset information technician
- Artificial intelligence engineer
- Computer vision engineer
- Data operations manager
- Data technician
- Environmental data analyst
- Planning analyst
- Research analyst
- Technology analyst.

Further study options

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

James

Founder | Data Scientist | Software Engineer
Isogonal Limited

Lecturer, University of Canterbury

PhD in Applied Mathematics, Yale University
Bachelor of Science with Honours in Mathematics

How did you get into data science?

I started with a degree in Mathematics, picked up Statistics along the way and developed my programming during graduate study. I applied my theoretical knowledge while working on my PhD and working as a software engineer at ESPN.

How has your education helped?

A solid grasp of the theory behind the statistical modelling and machine learning algorithms that are at the core of data science has prepared me to adapt easily to the constantly evolving industry. After finishing my PhD, I founded my own software engineering and data science consulting company to apply this theory to real-world problems.

What's it like having your own consultancy?

I'm responsible for determining how to solve problems in a client's domain. Most of my consulting can be done remotely, so I'm frequently designing data processing pipelines or writing machine learning algorithms with my two year old climbing up the furniture behind me! I am also designing and teaching a new course on data science computing at UC, along with developing industry partnerships for our master's students to work with real-world datasets. My experience allows me to help students who want to be part of the 'big data revolution'.

What is the most interesting part of your job?

That the same principles of mathematics and statistics can be applied to a wide range of problems. For example, in my first year of consultancy I worked on projects in online advertising, sociology, sports analysis, marketing, and media broadcasting.

Has there been a standout experience in your career so far?

I implemented a fraud detection algorithm which saved $1.2 million in lost revenue per year for my first client. This was very satisfying and the start of a mutually beneficial partnership.

Do you have any tips for those interested in data science?

Teach yourself programming by solving small problems using Python or R. Even high school students can get started through problem solving or taking up programming as a hobby.

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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