

Master of Data Science



Ethically manage, process and analyse data. Upgrade your **technical and mathematical skills** to impact the future of business.

Welcome to Federation University Australia

We're thrilled that you've taken the first step towards completing a degree with Federation University. Whatever your passion or career goals, Federation has everything you need to make your mark in the world.

Reasons to choose Federation University

TOP 200	Young Universities in the World ¹
TOP 300	Universities worldwide for Sustainable Development Goals ²
TOP 500	Universities worldwide for Computer Science ³
#2	in Victoria for Graduate Starting Salary ⁴
5/5 RATING	Excellence in Research⁵ Federation was rated at or above world standard in 80% of our submitted Fields of Research
	Affordable tuition fees and great scholarships available
	High quality , personalised teaching and dedicated international student support
	Industry integrated learning with opportunities for real life projects with industry leaders

1 Times Higher Education (THE) Young University Rankings 2023

2 Times Higher Education (THE) World University Impact Rankings 2023

3 Times Higher Education (THE) World University Rankings by Subject 2023

4 The Good Universities Guide 2024 (Postgraduate)

5 Excellence in Research Australia, 2018 National Report



Welcome to the Institute of Innovation, Science and Sustainability

With data central to the digital economy, more organisations are deploying data science tactics than ever before.

Considered a core business asset, data scientists are now deemed instrumental to decision making, process design, policy development, customer relations and more (AMSI-SSA Data Science Review, 2023). Whether you're looking to enter the corporate world, change careers or secure a promotion - there has never been a more exciting time to pursue a career in data science.

Federation University's Institute of Innovation, Science and Sustainability (IISS) delivers contemporary information technology degrees, designed to meet the needs of industry now and long into the future. Incorporating teachings from our expert academics and industry leaders, you will develop your skills in the classroom and put them into practice through real-world projects, simulations and placements. We ensure that every Master of Data Science graduate is equipped with confidence, knowledge, skills and experience to succeed in their career. That's why Federation University is internationally recognised by employers for producing highly desirable graduates.

Meet your Course Coordinator

Dr Savin Chand is an Associate Professor in Applied Mathematics and Statistics. Dr Chand's primary research focus is on severe weather events and climate extremes. His accomplishments in research and creativity have been meritorious and award-winning throughout his academic career of over 10 years at FedUni.

Dr Chand was awarded the Vice Chancellor's Award for Research Excellence on two occasions, 2017 and 2022, for leading world-class research in the area of "weather and climate extremes". He continued to excel in these areas through cutting-edge research with leading scientists from around the world. For example, in 2022, Dr Chand published a paper entitled 'declining tropical cyclone frequency under global warming' as a lead author in the prestigious Nature Climate Change journal. This work received scientific recognition globally and is currently tracking in the top 5% of all publications ever tracked by the Nature Altimetric with over 31k downloads. Dr Chand works very closely with national and international research institutions, industries and universities, including the Australian Bureau of Meteorology and the Commonwealth Scientific and Industrial Research Organisation.

Connect with Dr Chand throughout the Master of Data Science course to work on a weather and climate related project using state-of-the-art analysis techniques, or he will put you in contact with other world leading Federation academics and researchers to help you with a project of your interest or choice.



Dr Chand (left) conducting research with a colleague in Vanuatu during 2023 as part of a CSIRO-funded project. Drones were deployed to map local geographies of Port Resolution to better understand impacts of climate change on the coastal ecosystem.

What to expect

Our Master of Data Science will see you:

- gain a **deep knowledge of interdisciplinary areas of data science**, including data mining, machine learning, artificial intelligence, cloud computing, statistical modeling and data visualisation
- **gain experience in applying different data science-related skills** to areas including health care, finance, government administration, and the IT industry
- dedicate a portion of your final year to completing a research project. Gain **work-ready skills**, while also establishing **professional networks** with Federation’s industry partners
- **graduate with a competitive edge**, having advanced knowledge to ethically manage, process and analyse complex information using relevant technologies and big data processing tools.

Whether your background is in information technology, mathematics or statistics – our Master of Data Science will put you in high demand across a wide range of industries. Throughout the degree, you’ll undertake a variety of core and elective units, designed to equip you with the future-focused knowledge and skills of a successful data science professional.

Applied mathematics and artificial intelligence are a fundamental part of this contemporary course. Using theory and practical concepts, you will learn to manage, manipulate, analyse and visualise data, applying them to real-world scenarios. Develop your expertise in handling large volumes of information, work with real-time data, cloud computing, unstructured data and statistical models. You’ll also take a deep dive into machine learning, cyber threat analysis, experimental design, programming and more.

Sounds exciting, right?

What’s in the detail?

CRICOS	104808F
INTAKES	Semester 1 (February) Semester 2 (July)
CAMPUSES	Mt Helen (Ballarat) Online
DURATION	2 years full time (240 credit points)
FEES (ANNUAL)	\$28,240 New international students may be eligible for a tuition fee scholarship. federation.edu.au/current-students/starting-at-federation/scholarships/international-scholarships ↗
ACCREDITATION	This degree is accredited by the Australian Computer Society (ACS) ↗ and the Statistical Society of Australia (SSA) ↗

Sample course plan

MASTER OF DATA SCIENCE (CRICOS CODE 104808F)

	YEAR 1	YEAR 2
SEMESTER 1	Foundations of programming (15 credit points)	Advanced data science project 1 (30 credit points)
	Data science for all (15 credit points)	
	Statistics and R (15 credit points)	Experiment design and visualisation (15 credit points)
	Elective (15 credit points)	Computational methods for data analysis (15 credit points)
SEMESTER 2	Professional research and communication (15 credit points)	Advanced data science project 2 (30 credit points)
	Artificial intelligence and machine learning (15 credit points)	
	Elective (15 credit points)	Data analytics for cyber threat intelligence (15 credit points)
	Elective (15 credit points)	Regression and multivariate data analysis (15 credit points)

Advanced data science project

In the final year of this degree, students dedicate two semesters to completing a research project. The project requires students to work on a real-world data science problem to develop viable and innovative solutions before presenting their findings in class. Federation’s vast network of partners and established research centres support this project, offering students invaluable mentorship and guidance while simulating a manager-employee relationship.

By virtue of the 60 credit point project and research methods course, students may also complete a research thesis and use this as a pathway to a higher degree by research.

Course details, fees and sample structures are subject to variation. For the most up to date information, visit our Course Finder website, study.federation.edu.au

Industry connections

What sets Federation University apart is our commitment to providing every student authentic and impactful workplace experiences. And when it comes to industry connections, we don't just dip our toes in, we take a deep-dive into the data-science ecosystem.

As a Master of Data Science student, you will put your new high-level technical skills into practice through a dedicated research project that spans the final two semesters of your degree. You may find yourself consulting for a regional resource group, working with local council, a tech company, or a researcher from one of Federation's six collaborative research centres. By the end of the project, you will have honed your creative problem-solving skills and built networks as a confident, job-ready graduate.

Put your dream career in reach

This course can catapult you into a fulfilling career at the forefront of critical business decisions and processes. Qualified professionals are highly sought after for their ability to navigate big data and extract insights to move businesses forward.

Upon graduating from this course, you'll have the knowledge, skills and experience to work across diverse industries in a variety of professional roles, including:

- Data scientist
- Machine learning engineer
- Statistician
- Data engineer
- Data warehouse architect
- Researcher
- Business or risk analyst
- Business intelligence analyst



Collaboration with Central Highlands Water

Federation University has a strong collaborative relationship with Central Highlands Water (CHW) – a corporation that provides drinking water, sewerage, trade waste and recycled water services to over 180,000 customers throughout its service region.

Team Leader Data and Analytics at CHW and current Master of Data Science student, David Brown, says data science skills will play a pivotal role in the future of resource industries.

"The Victorian water industry is developing a strong appetite to apply data science and machine learning technology to its business operating models. This enables evidence-based decision making in diverse categories, including customer demography, operational performance, environment forecasting, and business strategy."

David was attracted to the degree by the opportunity to leverage CHW's long-term data capabilities from its project-based units.

“ CHW actively collaborates with Federation University to achieve commercial innovations, using research in data, analytics, and engineering disciplines. Across the Victorian water industry there is an accelerating trend of leveraging technology and big data to innovate business operating models. For example, there is a growing appetite to understand our energy footprint across our asset network, by cross-comparing energy and network performance data assets. The results of this research provide opportunities to lower our carbon footprint, using evidence-based network optimisation decisions. This results in a more resilient and future-ready business, in addition to safeguarding our natural environment and resources. ”



David Brown
Team Leader Data and Analytics
Central Highlands Water

Entry and application information

Entry requirements

To be eligible for this course students must have **successfully completed**:

- A **recognised undergraduate degree** at AQF 7 in an area of science, mathematics, statistics, engineering, information technology or business; and
- Evidence of completion of an **introductory mathematics** unit **AND** at least one **information technology unit** in their undergraduate degree, or an approved elective unit in their first semester of study; and
- Academic **IELTS overall score of 6.0**, with no bands less than 6.0 (or equivalent)

For more information on satisfying English language requirements, including accepted test courses, please visit **this link**  [federation.edu.au/international/study-at-federation/apply/prepare-your-application/english-language-requirements](https://www.federation.edu.au/international/study-at-federation/apply/prepare-your-application/english-language-requirements).

Once you have submitted your application, you will be assessed against the course entry requirements and for available pathways and scholarships.

Pathways designed specifically for you

If you have not met the entry requirements for this course, don't worry. With a range of pathways now available, you can be studying at Federation University sooner than you think.

English Language courses

(CRICOS Code 113565A)

Students who do not meet the English language requirements for this course may be eligible to complete one of our English for Academic Preparation (EAP) courses. These courses have been newly designed to equip you with the English speaking, reading, writing and listening skills needed to be successful in your university studies. Depending on your English level, Admissions will package the appropriate pathway option together with your chosen degree.

Find out more

[study.federation.edu.au/area/pathways](https://www.study.federation.edu.au/area/pathways)

Alternate exit points

Students wishing to exit the Master of Data Science course early, may achieve the following qualifications:

- **Graduate Certificate in Data Science** – awarded to students who exit the course after 6 months, having completed 60 credit points
- **Graduate Diploma of Data Science** – awarded to students who exit the course after 12 months, having completed 120 credit points

Scholarships

Studying in Australia just became more affordable

At Federation University Australia, we're driven to make a real difference to the lives of every student who studies with us.

From pathways to recognition of academic excellence, accommodation support to research grants – we offer a range of scholarships to help you start studying sooner.

Visit our website to learn more about available scholarships, terms and conditions, eligibility criteria, and how to apply.

Find out more

[federation.edu.au/scholarships](https://www.federation.edu.au/scholarships)





Feel supported to succeed

We understand that choosing to study abroad is both an exciting and challenging time. Help at Federation University is readily available - be it support with your English, understanding your assignments, or finding someone to talk to about personal life concerns. No matter the challenge, our range of student-focused services enables international students to develop skills, knowledge and confidence in a supportive environment that is united in your ambition to succeed.

Some of our support services include:

	English Language Support Service
	Libraries and Learning Skills Advisory
	Counselling
	International Student Employability
	International Student Advisory
	Spiritual facilities
	Support for students with disabilities
	Sports and clubs

Minh, Vietnam

Master of Data Science

With a background in computer science and passion for software development, Minh thought data science was a natural step in progressing his career. *"Federation's appeal lies in its cutting-edge data science curriculum, providing an excellent platform for me to expand my skill set. The course aligns seamlessly with my career aspirations, offering a unique opportunity to enhance both my computer science proficiency and delve into the dynamic realm of data science."*

Minh also got to meet with data science professionals who presented lectures during the course.

"Two prominent industry contacts I spoke with include Natalie Gunn (Data and AI Specialist from IBM Technology) and Shaila Pervin, PhD (Senior Machine Learning Engineer at Foxtel Group). It's been inspirational to listen to their stories and hear how they got to where they are now."

The highlight of the course? Minh says it was learning AI and machine learning from Professor Peter Vamplew, while working on the Artificial Intelligence and Machine Learning unit. He was later employed by the university to continue his impressive work as a Research Assistant to Professor Vamplew.

“Being employed to assist in a research project will forever be a highlight in my course, since it also shows the amount of support I got from my teachers to reach my full potential. **”**

Your next steps

Whether you're applying directly or via an agent, just follow these simple steps



Step 1

FIND YOUR COURSE

Find the Federation University course you wish to study

- For undergraduate and postgraduate courses visit study.federation.edu.au
- Check you meet the academic entry requirements
- Check you meet the English language requirements
- Check for any essential requirements that you need to complete in addition to your application.

Essential requirements may include auditions, tests or interviews.

Step 2

APPLY

- International students or their agents must apply through the **StudyLink** online application system
Visit federation.edu.au/international/study-at-federation/apply
- Follow the instructions and ensure you have attached all relevant supporting documents.
- Details of documentation required is available at federation.edu.au/international/prepare

Note: Be aware of cut off dates.



Step 3

ASSESSMENT

Your application will be assessed by our team

- English language requirements
- Academic entry requirements
- Scholarships



Step 4

OFFER MADE

Congratulations!

You will be sent an International Student Offer and Acceptance Pack that includes:

- Letter of Offer
- Information for accepting your offer
- GTE and/or financial assessment forms*

Refer federation.edu.au/SSVF for more information.

*International students may be required to complete a pre-visa screening process as a condition of their offer under the requirements of the Simplified Student Visa Framework (SSVF). The requirements will depend on a number of factors.



Step 5

ACCEPTANCE AND PAYMENT

Once you have provided all documentation and met all conditions, sign the acceptance of your offer letter and pay the required fees.

We will then issue you with an electronic Confirmation of Enrolment (CoE).

Note: Payments to Federation must be made via Convera GlobalPay through your StudyLink application.



Step 6

VISA APPLICATION WITH COE

You will need your CoE to apply for your Australian student visa.

More information on the visa application process is available at immi.homeaffairs.gov.au

Note: Make sure you plan in advance to get your visa in time.



Step 7

PREPARE TO ARRIVE

We will send you an International Student Support Guide to help you understand what to expect.

FLIGHTS

Make sure you arrive in time to attend the compulsory International Student Orientation Program that is held in the weeks before semester commences.

ACCOMMODATION

Check out the offers from FedLiving – on-campus accommodation in Ballarat, Berwick and Gippsland.



Federation.edu.au
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#feduni/ 
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Disclaimer: Information contained in this brochure was correct at the time of publication (February 2024). Federation University Australia reserves the right to alter any course, procedure or fee, as deemed necessary. Prospective students should confirm course information by visiting federation.edu.au and vtac.edu.au or by contacting the University directly. Produced by the Global Professional School, Federation University Australia. Federation University Australia courses are delivered with Victorian and Commonwealth Government funding to eligible applicants. CRICOS Provider No. 00103D | RTO Code 4909 | TEQSA No. PRV12151 (Australian University), CC_080224