UTS

UNIVERSITY OF TECHNOLOGY SYDNEY

UTS:**MASTER OF DATA SCIENCE & INNOVATION**

POSTGRADUATE COURSE GUIDE

cic.uts.edu.au

SIMON BUCKINGHAM SHUM

**PROFESSOR OF LEARNING INFORMATICS, AND
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Simon Buckingham Shum
is Director of the Connected
Intelligence Centre (CIC). He brings
a human-centred approach to the
challenge of designing analytics that
promote deep learning.

CIC works at the intersection of
research and education, to break
new ground in the use of data and
analytics within UTS to improve the
student experience.
utscic.edu.au

"Data and analytics shouldn't be framed as 'cold hard figures'.
They're new kinds of tools for thinking and they embody
perspectives that must be critically appraised. So how do
we move ethically from digital bits and bytes, to human
insight and innovation?

The MDSI will immerse you in this exploding world in a
unique way; as a transdisciplinary course, you will quickly
get hands-on with data and analytics tools, reflect deeply
on the very human issues these can raise, and leave
better equipped to lead a data science team, and influence
decisions with evidence."

Simon Buckingham Shum

WHY STUDY THE MDSI AT UTS?

The Master of Data Science and Innovation addresses the global talent gap for people with analytics and data science knowledge by exploring diverse industry perspectives and integrating data value with human values to shape future practice.

> Be part of a **world-first and world-leading program of study**, the only transdisciplinary data science degree offered in Australia where creativity and innovation are integral components.

> **Develop your human-centred perspective on big data**; a critical mind that thinks ethically and systemically about the uses of data and analytics.

> **Engage in collaborative learning** with professionals and peers from various fields.

> **Develop your creative thinking skills** to confront contemporary challenges. Create innovative opportunities and future possibilities through analysis and interpretation of complex data and human concerns.

> **Explore real-world projects** and actual data sets with coursework and iLab industry engagement. Design your own investigation for your current industry or interest.

> **Discover new insights** by framing informed strategic questions. Analyse, interrogate, visualise and communicate with data to direct and lead organisations at the highest executive level.

> **Develop specialist skills** that are in demand across industries. Shape existing practices and carve out new opportunities and unique professional capabilities.

> **Learn from experienced and renowned academics across UTS**, as well as leading industry professionals. Their expertise provides exciting opportunities for students to be exposed to ground-breaking research.

STUDENT TESTIMONIALS

> "UTS was the only university in Australia, and perhaps the world, to provide a transdisciplinary human-centric course – the MDSI."

> "If you also want to push your limits and redefine your boundaries then this is the course to do."

Pedro Fernandez de Mendonca
International MDSI student since 2015

UTS was the only university in Australia, and perhaps the world, to provide a transdisciplinary human-centric course – the MDSI.

This course is not all about improving my technical capabilities, but also about acknowledging the ethics and the responsibility behind my decisions. Creativity and ingenuity are also fundamental in the data science practice and those characteristics are nurtured throughout the course, as is strong teamwork and communication.

I've been taught in state of the art techniques and methods by passionate lecturers and guest industry leaders. I'll always remember how my work for a subject, was presented to senior stakeholders in a major organisation, and fundamentally changed their perspective on the uses of their data.

Rory Angus
MDSI student since 2016

The innovation part of the MDSI degree is what I think sets it apart from other courses. I have learnt more about myself and my own internal barriers to innovation in the last four months than the prior 20 years of working. It has started to provide me with the confidence to find my voice and use it.

The UTS Connected Intelligence Centre's team of leading academics teach dynamic and enjoyable sessions that leave me exhausted and exhilarated at the same time. I would recommend this course if you are after more than just the core skills of being a data scientist. If you also want to push your limits and redefine your boundaries then this is the course to do.

> "You get to view data science from all different angles – it's a bit choose your own (data) adventure."

> "What makes this Masters unique is the fact that it goes beyond data science."

Kelly Tall

MDSI student since 2015

The MDSI has a good mixture of practical and critical engagement with the subject matter. I like that I've been allowed to stretch my electives into the design and communications faculties. I love the idea of combining data with design and communication to tell stories about the world we live in, or could live in.

Data Science is such a broad field, and being a transdisciplinary course also means you have access to all the faculties and their expertise. You get to view data science from all different angles – it's a bit choose your own (data) adventure.

I am half way through the course and it's helped me land a job with Fairfax, working on data analysis and visualisation in their Sydney newsroom.

Patricia Kavinski

International MDSI student since 2015

What makes this Masters unique is the fact that it goes beyond data science. The course also focuses on innovation, which in my opinion, is an essential skill for a data scientist. The iLabs also provide students with the chance to play the role of Data Scientist and solve real world problems.

The lectures are very interactive and dynamic. Being a transdisciplinary course you also have the opportunity to work with people from different backgrounds, which makes the group assessments very interesting. My goal in the future is to use the knowledge acquired in the Masters to work as a Data Scientist and assist companies to achieve better results by efficiently extracting the knowledge and insights from data.

CAREER OPTIONS

The MDSI prepares students to participate in a variety of emerging careers with the growth of data science; data analyst, data artist, data journalist, mobile behaviour analyst, data-driven policy expert, advertising insight and online community manager to name a few.

While other offerings also provide the basis for these careers, the **UTS MDSI provides an additional level of expertise, targeting professionals who have the desire to lead teams and organisations at the Chief Executive level.**

Dr Theresa Anderson
Course Director: Master of Data Science and Innovation
Connected Intelligence Centre

"Meeting the challenges of the data explosion faced by so many organisations, causes us to find new ways to work with and think about data. By taking a transdisciplinary approach to the study of data and analytics, the Master of Data Science and Innovation provides opportunities for students to pursue emerging careers in this evolving data landscape.

Increasingly, companies need someone who can make sense across the spectrum of where data is flowing and then help translate that data into information that can feed innovation. But innovation requires a very different mindset, in addition to the technical capacity of analysing data. Our students develop that intersection of both their creative and their analytical mindset.

Building a community of co-learning is also an important element of the MDSI course, and our students are valued for their team working skills and willingness to share and be part of the MDSI community."

By 2020 it is estimated that there will be 4 times more digital data in bytes than grains of sand exist on the entire planet

Judah Phillips 2013

COURSE STRUCTURE

Students must complete 96 credit points (CP), comprising 72CP core and 24CP electives. Electives can be selected from across the University's disciplines, on approval from the Course Director and with demonstrated ability to meet pre-requisites, allowing students to pursue their own particular interests or build areas of strength.

INDUSTRY PARTNERSHIPS AND ENGAGEMENT

Industry partnerships and engagement are a core part of the program and prepare students to tackle complex real world challenges.

There are two iLabs during the program, which provides students with the opportunity to design investigations utilising contemporary data discovery techniques and large, complex, multi structure data sets. You will test new approaches from current research literature, or propose new studies, under the supervision of transdisciplinary staff. In the final iLab, the study will either be focused on your current work environment, or industry partnerships can be negotiated in a discipline of interest.

The curriculum uses real-world projects, and invites industry to work with students both formally and informally. A partnership has also been developed with the NSW Data Analytics Centre to integrate data challenges or 'Hackathons' into the curriculum.

FULL-TIME STUDY PROGRAM

		Study stream		
YEAR 1	Session 1	Data Science for Innovation (8cp) 36100	Statistical Thinking for Data Science (8cp) 36103	Data, Algorithms and Meaning (8cp) 36106
	Session 2	Elective 1 (6cp)	Elective 2 (6cp)	iLab 1 (12cp) 36102
YEAR 2	Session 1	Project Managing Data Driven Solutions (8cp) 36101	Data Visualisation and Narratives (8cp) 36104	Data Driven Decision Making (8cp) 36109
	Session 2	Elective 3 (6cp)	Elective 4 (6cp)	iLab 2 (12cp) 36105

PART-TIME STUDY PROGRAM EXAMPLE

		Study stream					
YEAR 1	Session 1	Data Science for Innovation (8cp) 36100	Data, Algorithms and Meaning (8cp) 36106	YEAR 2	Session 1	Statistical Thinking for Data Science (8cp) 36103
	Session 2	Elective 1 (6cp)	Elective 2 (6cp)		Session 2	iLab 1 (12cp) 36102
YEAR 3	Session 1	Project Managing Data Driven Solutions (8cp) 36101	Data Visualisation and Narratives (8cp) 36104	YEAR 4	Session 1	Data Driven Decision Making (8cp) 36109
	Session 2	Elective 3 (6cp)	Elective 4 (6cp)		Session 2	iLab 2 (12cp) 36105

Teaching Mode: The MDSI is designed with flexibility in mind. Classes are usually held after 6pm during the week and during the day on Saturdays. Students can expect to be on campus on average 2 or 3 times a month during semester and may have obligations during semester breaks.

ADMISSION REQUIREMENTS

Applicants must address all 3 of the following criteria:

1. **Academic qualifications considered:**
   - > Bachelor degree
   - > Graduate diploma
   - > Graduate certificate
   - > Masters degree
   - > Doctoral degree

2. **The above qualifications must be in one of the following related disciplines:**
   - > Mathematical Sciences
   - > Computer Science
   - > Physics and Astronomy
   - > Engineering
   - > Accounting
   - > Banking, Finance and Related Fields
   - > Economics and Econometrics

Applicants who hold other academic qualifications may be considered on the basis of general and professional qualifications that demonstrate their potential to the Master of Data Science and Innovation.

3. **A minimum of 3 years professional/industry experience or demonstrated equivalent.**

APPLYING

Domestic Students

Applications can be completed quickly and easily online through the Universities Admissions Centre (UAC).

- > To apply through UAC visit **uac.edu.au**
- > For more information: Tel: (02) 9752 0200

Applications with previous qualifications completed in Australia can also be submitted in person at one of our Postgraduate Info Sessions. Register at postgraduate.uts.edu.au

International Students

This course guide is not intended for international students. International students should contact UTS International: **international.uts.edu.au** for relevant information.

FEES

FEE-HELP is a government loan scheme that assists eligible local students to pay their tuition fees. Using FEE-HELP means you do not have to pay for your tuition fees up front. You can inform your employer that you have a FEE-HELP loan and they will withhold your payments through the PAYG tax system.

For information about FEE-HELP please contact:

Tel: 1800 020 108 or **studyassist.gov.au**

If your postgraduate degree is related to your employment, your tuition fees may be tax deductible. For more information, contact your financial adviser or the Australian Tax Office (ATO) **ato.gov.au**

English language proficiency

Visit our website for English language requirements **uts.edu.au/future-students/ international/essential- information/entry-requirements/ english-language-requirements**

Further Information

For more information on the MDSI, contact us on **mdsi@uts.edu.au**

UTS:CIC
CONNECTED INTELLIGENCE CENTRE

UTS Connected Intelligence Centre (CIC) launched in August 2014, as an innovation centre to help UTS faculties and business units benefit from data science.

CIC works as a creative incubator to catalyse thinking about the use of data and analytics among students, educators, researchers and leaders, with a creative, human-centred approach. They design and evaluate innovative learning analytics tools, and host events to spark ideas and reflective dialogue for those seeking to stay at the forefront of data science and human sensemaking.

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