



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

POSTGRADUATE COURSE GUIDE

[cic.uts.edu.au](http://cic.uts.edu.au)



# ABOUT THE MDSI

Commencing 2015, the **Master of Data Science and Innovation (MDSI)** is a world leading program of study and clearly cements UTS as a leading university of technology.

Taking a transdisciplinary approach, the MDSI utilises a range of perspectives from diverse fields and integrates them with industry experiences, real-world projects and self-directed study, equipping graduates with an understanding of the potential of analytics to transform practice. The course is delivered in a range of modes, including contemporary online and face-to-face learning experiences in leading edge facilities.

Work experience/industry placement is an important component of the course.



# WHY STUDY THIS COURSE?

This course has been developed as a response to a global talent gap for people with data science knowledge, as identified and reported by the McKinsey Global Institute study (2011). The study predicted a shortfall of nearly 200,000 data scientists by 2018 and 1.5 million managers with the capability to make decisions using big data for the United States alone.

The dramatic growth of data in every conceivable industry from oceanography to market research presents another major driving force in generating unprecedented global demand for a data science skill set.

By 2020, the estimate is that there will be four times more digital data in bytes than grains of sand exist on the entire planet (Judah Phillips 2013) and trillions of sensors by 2022 (Stanford 2013). This data deluge will need to be managed and interrogated by people who have the skills to frame the strategic questions, translate that into

‘data language’, source data relevant to an investigation, mine, analyse, visualise and communicate the outcomes of that, leading their organisation in evidence-based decision making and transformation.

**The MDSI differs significantly from other courses in two key areas:**

- i. To tackle complex real world challenges, the course design prepares graduates to approach problems from a variety of perspectives, by integrating practices from diverse fields including finance, legal, retail, advertising, defence, intelligence, telecommunications, utilities, healthcare and pharmaceuticals.**
- ii. The course design immerses students in the volume and variety of data types that are transforming virtually every profession, creating new opportunities and challenges for industry, business, government and society.**



# CAREER OPTIONS

The MDSI prepares students to participate in a variety of emerging careers with the growth of data science; the data griot, 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.**



**Simon Buckingham Shum**  
Professor of Learning Informatics, and Director  
Connected Intelligence Centre (CIC).

Prof. 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 computation and education to break new ground in the use of analytics to improve learning. [cic.uts.edu.au](http://cic.uts.edu.au)





# WHO SHOULD APPLY

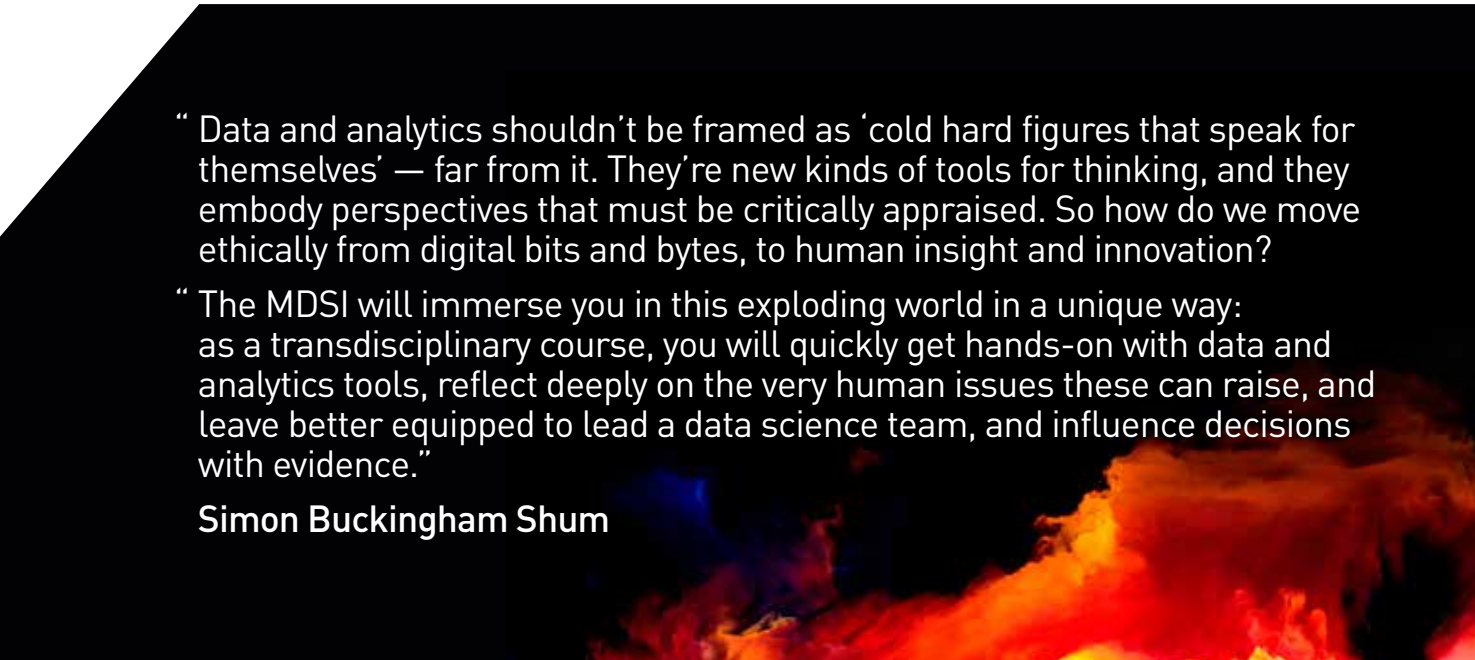
Graduates, or those with industry experience who are likely to excel in this area include:

- > Actuarial Studies
- > Applied Finance
- > Astronomy
- > Biomedical Science
- > Business Administration
- > Business Analytics
- > Business Informatics
- > Commerce
- > Computer Science
- > Computing Studies
- > eBusiness
- > Economics
- > Engineering
- > Environmental Science
- > Forensic Science
- > ICT
- > Mathematical Science
- > Medical Mathematics
- > Medical Science
- > Physics
- > Project Management
- > Psychological Science
- > Software Engineering
- > Statistics

“ Data and analytics shouldn’t be framed as ‘cold hard figures that speak for themselves’ — far from it. 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**



## 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, allowing students to pursue their own particular interests or build areas of strength.

### FULL-TIME STUDY PROGRAM

		Study stream			
YEAR 1	Semester 1	Data Science Practices 24 CPS	Data Science for Innovation 8 CPS	Statistical Thinking for Data Science 8 CPS	Data, Algorithms and Meaning 8 CPS
	Semester 2	Innovation Lab 24 CPS	Elective 6 CPS	Elective 6 CPS	iLab 1 12 CPS
YEAR 2	Semester 1	Leading Data Initiatives 24 CPS	Project Managing Data Driven Solutions 8 CPS	Data Visualisation and Narratives 8 CPS	Data Driven Decision Making 8 CPS
	Semester 2	Innovation Lab 24 CPS	Elective 6 CPS	Elective 6 CPS	iLab 2 12 CPS

## INDUSTRY PLACEMENTS/WORK EXPERIENCE

The final iLab provides the opportunity for students to design investigations utilising contemporary data discovery techniques and large, complex, multi structure data sets. They will test new approaches from current research literature, or propose new studies, under the supervision of transdisciplinary staff. The study can focus on their current work environment, or industry placements can be negotiated in a discipline of interest.

## 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. Completed one of the listed academic qualifications with FOE in:

- > 0101 – Mathematical Sciences
- > 0201 – Computer Science
- > 0103 – Physics and Astronomy
- > 03 – Engineering
- > 0801 – Accounting
- > 0811 – Banking, Finance and Related Fields
- > 0901- Economics and Econometrics

If academic qualifications are not in these fields, the applicant must provide evidence of prior learning and demonstrated capability with quantitative data skills, key mathematical concepts and programming experience.

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

## Fees

For information on postgraduate fees for all UTS courses visit [fees.uts.edu.au](http://fees.uts.edu.au)

### FEE-HELP

FEE-HELP is a government loan scheme that assists eligible local students to pay their tuition fees.

For details visit: [studyassist.gov.au](http://studyassist.gov.au)

Using FEE-HELP means you do not have to pay your tuition fees upfront. You can inform your employer that you have a FEE-HELP loan and they will withhold your payments through the PAYG tax system.

For more information about FEE-HELP please contact:

Tel: 1800 020 108 or [studyassist.gov.au](http://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.gov.au](http://ato.gov.au)

## Subject Exemptions

Exemptions may be provided for the elective stream and can be negotiated with the Course Director on enrolment. Exemptions will not be provided for the core subjects and iLabs.

## Further Information

For more information on the MDSI, contact the Building 10 Student Centre on 9514 1222 or [www.ask.uts.edu.au](http://www.ask.uts.edu.au)

[cic.uts.edu.au](http://cic.uts.edu.au)

# UTS: CIC

CONNECTED INTELLIGENCE CENTRE

UTS has launched a world class Learning Analytics research lab: the Connected Intelligence Centre (CIC). CIC is a creative incubator where research and practice inform each other — in UTS and our global partners.

CIC recognises the uniqueness and centrality of the human element in analytics systems. People bring unique sensemaking and narrative capacities which complement and contextualise computational power. So CIC adopts a human-centred informatics approach to all forms of machine intelligence and visualisation, with particular interests in discourse, dispositional and social learning analytics.

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