

# Master of Science (MSCN) - MSc

CRICOS code (International applicants): 078596M

	<b>On-campus<sup>^*</sup>†</b>	<b>Distance education<sup>^†</sup></b>
<b>Semester intake:</b>	Semester 1 (February) Semester 2 (July)	Semester 1 (February) Semester 2 (July)
<b>Campus:</b>	Toowoomba	-
<b>Fees:</b>	Commonwealth supported place Domestic full fee paying place International full fee paying place	Commonwealth supported place Domestic full fee paying place International full fee paying place
<b>Standard duration:</b>	2 years full-time, 4 years part-time	

## Footnotes

<sup>^</sup> The Applied Data Science major will commence in Semester 2 2015.

<sup>\*</sup> The Environment and Sustainability and Astronomy majors are available to distance education students only. Therefore, these majors are not suitable for international students who wish to study on-campus.

<sup>†</sup> Semester 2 intake for the Mathematics/Statistics major will be subject to the approval of the Program Coordinator.

## Contact us

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to governance and community engagement. This coursework Masters program addresses these needs by providing important core studies and flexibility in choice of elective studies that will enhance their skills and knowledge in the broad discipline of environment and sustainability. Adaptation to climate change and sustainability science are emphasised in global and regional contexts in this major.

### Mathematics and Statistics major

This major is designed to provide an opportunity for graduates from other than mathematics and statistics programs to gain advanced skills and knowledge in key areas of mathematics and/or statistics which relate to their career needs and the needs of their profession or industry. The aim of this program is therefore to provide students with a broad advanced education in mathematical and/or statistical techniques and essential problemvTm(v)Tj1 0

- identify and establish strong links between science, effective community engagement and sound polic

A formal process of Accreditation of Prior Learning (APL) will be used to assess applicants without Bachelor degrees, who wish to gain entry to the program on the basis of equivalent experience or qualifications. Applicants should contact the Faculty of Health, Engineering and Sciences if they wish to be assessed for admission on this basis. Students who are enrolled or hold a Graduate Diploma of Science or a Graduate Certificate of Science or equivalents in the environmental science, climatology or related areas from a recognised university may apply for credit.

### Master of Science (Mathematics and Statistics)

Applicants may be admitted to the MSCN (Mathematics/Statistics) major if they:

- hold a Bachelor's degree from an Australian university or hold a degree of a recognised university or an approved equivalent qualification in any discipline; and have knowledge of mathematics at least equivalent to that found in [MAT1102 Algebra and Calculus I](#) and have appropriate communication skills equivalent to those covered in [CMS1000 Communication and Scholarship](#).

Students who are enrolled or hold a Graduate Diploma of Mathematics/Statistics or Science or a Graduate Certificate of Science in the Mathematics/Statistics area from a recognised university may apply for credit.

Particular choices of courses within this program may require additional pre-requisite or assumed knowledge. For example, some courses have a pre-requisite of basic computer programming skills equivalent to [CSC1401 Foundation Programming](#) course and others may require introductory knowledge of optimisation skills, such as those addressed in [MAT1200 Operations Research 1](#) course, basic knowledge of Algebra and Calculus I at the level of [MAT1102](#) or [ENM2600](#) course, and statistics skills equivalent to [STA2300 Data Analysis](#) course.

Domestic and International Applicants from a non-English speaking background are required to satisfy [English](#)

## Program structure

The Master of Science (Astronomy), Master of Science (Environment and Sustainability) and Master of Science (Applied Data Science) majors consists of 16 units of courses, consisting of those courses listed below in the Recommended Enrolment Pattern section.

The Master of Science (Mathematics and Statistics) major consists of sixteen courses which are all available in external mode. Students may choose at most three electives and must complete at least eight units at Level 8 (including electives) as in the Program Structure below including [MSC8001 Research Project I](#) and [MSC8002 Research Project II](#). At the beginning of their candidature students should submit a proposed enrolment pattern to the Program Coordinator for approval. Within this proposal students should have topics and names of any proposed supervisors for the appropriate Level 8 courses.

### Applied Data Science Major

This major consists of 16 courses which are all available in external mode.

### Core courses

Semester 1	Semester 2	Either Semester
<a href="#">CIS8008 Business Intelligence</a>	<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	<a href="#">MSC8001 Research Project I*</a> , or <a href="#">MSC8003 Industry Based Research Practice I*</a>
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a>	<a href="#">CSC8002 Big Data Management</a>	<a href="#">MSC8002 Research Project II*</a> , or <a href="#">MSC8004 Industry Based Research Practice II*</a>
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	<a href="#">CSC8003 Machine Learning</a>	<a href="#">STA2300 Data Analysis</a>
<a href="#">CSC8004 Data Mining</a>		

#### Footnotes

\* 2 unit course

**Four program elective units** from one of the disciplines below, with no more than three courses at undergraduate level. More program elective courses from other disciplines may be available after consultation with the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au).

Semester 1	Semester 2	Semester 3
<b>Agriculture Discipline Electives</b>		
<a href="#">AGR8001 Food Security in the 21st Century</a>	<a href="#">AGR8002 Emerging Technologies in Agriculture</a>	
<a href="#">CLI8001 Climate Risk^</a>	<a href="#">AGR8003 Critical Issues in Agriculture^</a>	
<b>Astronomy Discipline Electives</b>		
Compulsory course:		
<a href="#">PHY8001 Observational Astronomy*</a>		
Any one from the following:		
<a href="#">PHY8002 Planetary Science*</a>	<a href="#">PHY8003 Galactic Astronomy and Cosmology*</a>	
	<a href="#">PHY8004 Stellar Astronomy*</a>	
<b>Business Discipline Electives</b>		

CIS8701 Big Data Visualisation	MKT8004 Digital Business Management	CIS8011 Digital Innovation
CIS8702 Crypto-currencies	CIS8011 Digital Innovation	
<b>Computing Discipline Electives</b>		
CSC2402 Object-Oriented Programming in C++**	CSC2401 Algorithms and Data Structures**	
CSC2408 Software Development Tools**	CSC2404 Operating Systems**	
CSC8507 Networking Technologies**	CSC2406 Web Technology**	
CSC8417 Advanced Web Data Management**	CSC2407 Introduction to Software Engineering**	
CSC8407 Wireless and Internet Technology**	CSC2408 Software Development Tools**	
CSC8416 Advanced Programming in Java**	CSC8527 Scaling and Connecting Networks**	
CSC8419 Cryptography and Security**	CSC8409 XML and Semantic Web Services**	
CSC8503 Principles of Programming Languages**	CSC8420 Mobile Systems**	
CSC8512 Advanced System Administration**	CSC8421 Network Security**	
	CSC8415 Computer Network Programming**	
	CSC8513 Network Performance Analysis**	
<b>Information Systems Discipline Electives</b>		
CIS5100 Professional Skills for Information Systems	CIS5100 Professional Skills for Information Systems	CIS5100 Professional Skills for Information Systems
CIS5200 Professional Skills for Systems Analysis	CIS5101 Management of Business Online	CIS5101 Management of Business Online
CIS5302 Professional Skills for Business Analysis	CIS5205 Management of Information Security	CIS5200 Professional Skills for Systems Analysis
CIS5308 Management of Information Technology Services	CIS8000 Global Information Systems Strategy	CIS8011 Digital Innovation
CIS8000 Global Information Systems Strategy	CIS8010 Information Systems Project Management	CIS8100 Digital Enterprise
CIS8004 Enterprise Planning and Implementation	CIS8011 Digital Innovation	
CIS8008 Business Intelligence	CIS8018 Strategic Information Security	
CIS8009 Management of Business Telecommunications	CIS8500 Applied Research for Information System Professionals	
CIS8100 Digital Enterprise	CIS8501 Applied Information Systems Research Project	







## **IT requirements**

Students should visit the USQ [minimum computing standards](#) to check that their computers are capable of running the appropriate software and versions of Internet web browsers and to check the minimum and recommended standards for software.

## **Other program requirements**

To qualify for the award of Master of Science (Environment and Sustainability) students must pass 16 units



**Recommended Enrolment Pattern - Applied Data Science Major Part-time (8 Semesters, S1 commencement)**

Students are able to enrol in any of





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<a href="#">PHY8003 Galactic Astronomy and Cosmology*</a>			2	2			
<a href="#">MSC8002 Research Project II*</a>	2	2	2	2			Pre-requisite: <a href="#">MSC8001</a>

#### Footnotes

^ This elective is for students to take complementary studies in physics, mathematics, statistics or computing. Choice of the elective should be done in consultation with, and be approved by the Faculty of Health, Engineering and Sciences.

\* Two unit courses

## Recommended Enrolment Pattern - Astronomy Major Part-time (8 Semesters, S1 or S2 commencement)

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

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<a href="#">PHY1101 Astronomy 1</a>			1	1			
Elective^	1	1,2,3	1	1,2,3			
<a href="#">PHY1107 Astronomy 2</a>			1	2			
Elective^	1	1,2,3	1	1,2,3			
<a href="#">PHY8001 Observational Astronomy*</a>			2	1			
<a href="#">PHY8004 Stellar Astronomy*</a>			2	2			
<a href="#">PHY8002 Planetary Science*</a>			3	1			
<a href="#">PHY8003 Galactic Astronomy and Cosmology*</a>			3	2			
<a href="#">MSC8001 Research Project I*</a>	4	1	4	1			Pre-requisite: Students must be enrolled in one of the following Programs: MCTN or M COP or MCTE or BSCH or MSCN or have the approval of their program coordinator
<a href="#">MSC8002 Research Project II*</a>	4	2	4	2			Pre-requisite: <a href="#">MSC8001</a>

#### Footnotes

^ This elective is for students to take complementary studies in physics, mathematics, statistics or computing. Choice of the elective should be done in consultation with, and be approved by the Faculty of Health, Engineering and Sciences.

\* Two unit courses

## Recommended Enrolment Pattern - Environment and Sustainability Major Full-time (4 Semesters, S1 or S2 commencement)

Students are able to enrol in any offered mode of a course (on-campus, external or online), regardless of the program mode of study they enrolled in.

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<a href="#">REN8101 Environment, Society and Sustainability</a>			1	1			
<a href="#">CLI8204 Global Environmental Systems</a>			1	1			
<a href="#">MSC8001 Research Project I*</a>			1	1			Pre-requisite: Students must be enrolled in one of the following Programs: MCTN or M COP or MCTE or BSCH or MSCN or have the approval of their program coordinator
<a href="#">REN8202 Conservation for Sustainable Futures</a>			1	2			
<a href="#">CLI8205 Climate and Sustainability</a>			1	2			
<a href="#">ECO8012 Methods for Sustainable Development</a>			1	2	1	2	
<a href="#">REN3301 Biodiversity and Conservation</a>	1	2	1	2			

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2	1		
2	1		
2	1		Pre-requisite: <a href="#">MSC8001</a>
2	2		
2	2		
2	2		
2	2		Pre-requisite: <a href="#">REN8101</a>

### Environment and Sustainability Major Part-time

course (on-campus, external or online), regardless of the