

## Graduate Diploma of Science (GDSI) - GradDipSci

CRICOS code (International applicants): 031448M

	On-campus * + ^ # @	External * @
<b>Start:</b>	Semester 1 (February) Semester 2 (July)	Semester 1 (February) Semester 2 (July)
<b>Campus:</b>	Ipswich, 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>Residential school:</b>		Ipswich (Mandatory)
<b>Standard duration:</b>	1 year full-time, 2 years part-time	
<b>Program articulation:</b>	To: ; <a href="#">Master of Science</a> ; <a href="#">Master of Science (Research)</a>	

### Footnotes

- \* Please refer to the Program Structure for further information on mode of offer for each specialisation.
- + The Applied Data Science specialisation is available to international on-campus students at USQ Toowoomba (only if students have completed [STA8170 Statistics for Quantitative Researchers](#) or STA2300 ) and [CSC1401 Foundation Programming](#) or equivalent in their previous study).
- ^ The Mathematics and Statistics specialisation is available to international on-campus students at USQ Toowoomba — Semester 1 only.
- # The Sport and Exercise specialisation is available to International on-campus students at USQ Ipswich.
- @ Sport and Exercise specialisation: courses that include a practical skill competency component and residential school will be conducted at the Ipswich campus

### Contact us

Future Australian and New Zealand students	Future International students	Current students
<a href="#">Ask a question</a> Freecall (within Australia): 1800 269 500 Phone (from outside Australia): +61 7 4631 5315 Email: <a href="mailto:study@usq.edu.au">study@usq.edu.au</a>	<a href="#">Ask a question</a> Phone: +61 7 4631 5543 Email: <a href="mailto:international@usq.edu.au">international@usq.edu.au</a>	<a href="#">Ask a question</a> Freecall (within Australia): 1800 007 252 Phone (from outside Australia): +61 7 4631 2285 Email: <a href="mailto:usq.support@usq.edu.au">usq.support@usq.edu.au</a>

### Program aims

The program aims to produce graduates that are equipped with essential scientific and/or mathematical knowledge and an appreciation of the latest literature and technologies.

#### Agricultural Science specialisation

This specialisation provides graduates with a knowledge of contemporary issues associated with agricultural production and sustainability. The program aims to produce graduates with the capacity to engage with a range of agriculture related disciplines.

#### Applied Climate Science specialisation

The global climate service industry is estimated to have a significant and growing economic value. In Australia, the need for ‘climate smart’ professionals working within their chosen industry is growing with hundreds of job opportunities in industry and the public sector organisation. This specialisation is designed to provide graduates with the knowledge and decision-making skills to work as ‘climate smart’ professionals in many sectors of economic activity including agriculture, food, water, energy, health, and natural resource management industries.

### **Applied Data Science specialisation**

This specialisation is designed to provide an opportunity for graduates from all disciplines to gain skills and knowledge in handling data which are commonly known as Big Data, as well as producing and interpreting data analytics. The aim of this program is to provide students with a career path in the Data Science area or an opportunity for advancement in their career.

### **Environment and Sustainability specialisation**

This specialisation provides graduates with knowledge of selected basic concepts and skills associated with environmental and climate science and the broad area of sustainability. The program aims to produce graduates with knowledge and skills for the integration of social, environmental and economic research within an interdisciplinary planning and policy framework and to provide capacity for the sustainable management of natural resources, businesses and communities.

### **Mathematics and Statistics specialisation**

This specialisation aims to provide graduates with skills in key areas of mathematics or statistics that relate to the needs of their profession or industry, including teaching.

### **Physics and Astronomy specialisation**

This specialisation is designed to provide an opportunity to gain knowledge and skills in physics and astronomy and develop scientific research skills. The program provides professional development in science for those in educational or science communication careers.

### **Sport and Exercise specialisation**

This specialisation aims to provide graduates with the opportunity to develop and extend their knowledge and skills relevant to health, fitness and sports performance across the lifespan to an advanced level. The specialisation is designed to meet personal achievement goals or provide for career opportunities within the health, sports and fitness industry such as sports coaches, personal trainers, sports development officers or a range of other roles.

### **General specialisation**

This specialisation enables students who have completed at least 8 courses with at least 4 courses at level 8 from courses within other Graduate Diploma of Science specialisations to exit from the [MSCN Master of Science](#).

## **Program objectives**

On completion of the program graduates should be able to:

- Synthesise an understanding of a complex body of advanced knowledge in a discipline of science.
- Apply established theories to a body of advanced knowledge or practice in a relevant science discipline.
- Critically analyse, evaluate and consolidate on complex advanced information, problems, concepts and theories applicable to a relevant science discipline.
- Interpret and transmit advanced knowledge, skills and ideas, both individually and collaboratively, to a range of audiences.
- Display autonomy, responsibility, adaptability and ethical practise in decision-making and engage in lifelong learning through critical reflection in a range of professional and cultural contexts.

## **Australian Qualifications Framework**

The Australian Qualifications Framework (AQF) is a single national, comprehensive system of qualifications offered by higher education institutions (including universities), vocational education and training institutions and secondary schools. Each AQF qualification has a set of descriptors which define the type and complexity of knowledge, skills and application of knowledge and skills that a graduate who has been awarded that qualification has attained, and the typical volume of learning associated with that qualification type.

This program is at AQF Qualification Level 08. Graduates at this level will have advanced knowledge and skills for professional or highly skilled work and/or further learning.

The full set of levels criteria and qualification type descriptors can be found by visiting [www.aqf.edu.au](http://www.aqf.edu.au).

## Admission requirements

To be eligible for admission, applicants must satisfy the following requirements:

- Completion of an Australian university three year Bachelor degree in any area, or equivalent.  
Or  
equivalent professional work experience, as determined through the [Credit and Exemption Procedure](#).
- English Language Proficiency requirements for Category 3.

All students are required to satisfy the applicable [English language requirements](#).

If students do not meet the English language requirements they may apply to study a University-approved [English language program](#). On successful completion of the English language program, students may be admitted to an award program.

## Program fees

### Commonwealth supported place

A Commonwealth supported place is where the Australian Government makes a contribution towards the cost of a students' higher education and students pay a [student contribution amount](#), which varies depending on the courses undertaken. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

Commonwealth Supported students may be eligible to defer their fees through a Government loan called [HECS-HELP](#).

### Domestic full fee paying place

Domestic full fee paying places are funded entirely through the full fees paid by the student. Full fees vary depending on the courses that are taken. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

Domestic full fee paying students may be eligible to defer their fees through a Government loan called [FEE-HELP](#) provided they meet the residency and citizenship requirements.

Australian citizens, Permanent Humanitarian Visa holders, Permanent Resident visa holders and New Zealand citizens who will be resident outside Australia for the duration of their program pay full tuition fees and are not eligible for [FEE-Help](#).

### International full fee paying place

International students pay full fees. Full fees vary depending on the courses that are taken and whether they are studied on-campus, via distance education/online. Students are able to calculate the fees for a particular course via the [Course Fee Finder](#).

## Program structure

All specialisations within the program consist of eight units of study taken from the specialisation tables. At least four units must be at Level 8.

Specialisation	Offering		
	ONC	ONL	EXT
Agricultural Science <sup>^</sup>	Toowoomba	Online	depending on chosen approved courses
Applied Climate Science		Online only	
Applied Data Science (part-time, full-time with approval) <sup>#</sup>	Toowoomba	Online	

Environment and Sustainability		Online only	
Mathematics and Statistics (Semester 1 full-time or part-time; Semester 2 part-time only) @	Toowoomba	Online	depending on chosen approved courses
Physics and Astronomy		Online only	
Sport and Exercise	Toowoomba or Ipswich		some courses have mandatory residential schools which will be held at the Ipswich campus.
General	Toowoomba	Online	depending on chosen approved courses

#### Footnotes

- ^ Some approved courses for selection have mandatory or highly recommended residential schools and students enrolled externally must be able to attend the residential schools at the specified USQ campus.
- # Available in Semester 1 full-time only to students who have completed [CSC1401 Foundation Programming](#) and STA2300 (or [STA8170 Statistics for Quantitative Researchers](#)) in their previous study. The Semester 2 full-time intake will be subject to the approval of the Program Coordinator.
- @ The Semester 1 full-time enrolment assumes students have current skills at the level of Queensland Senior Secondary Schools Studies Mathematics B equivalent. Students without this knowledge might have to study part-time. The Semester 2 full-time intake will be subject to the approval of the Program Coordinator.

### Required time limits

Students have a maximum of 3 years to complete this program.

### Agricultural Science specialisation

This specialisation consists of 4 core courses, all available in online mode, and 4 approved courses.

Semester 1 ^	Semester 2 ^
<b>Mandatory core courses:</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>And four of the following Approved Courses</b>	
<a href="#">AGR2303 Agronomy</a>	<a href="#">BIO3318 Plant Microbe Interactions</a> *
<a href="#">AGR3303 Agricultural Materials and Post-Harvest Technologies</a>	<a href="#">BIO8201 Biology Foundations</a>
<a href="#">AGR4305 Agricultural Soil Mechanics</a>	<a href="#">ENV4106 Irrigation Science</a>
<a href="#">SCI3302 Industry Placement</a> #	<a href="#">REN3302 Sustainable Resource Use</a>

#### Footnotes

- ^ Students may vary their enrolment on the basis of prior studies or professional requirements with the approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au).
- \* This offering has a highly recommended residential school (linked to an assessment item and non-attendance will mean a student misses an element for assessment preparation or an element of assessment)
- # [SCI3302 Industry Placement](#) may be available subject to approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au) and availability of relevant placement.

### Applied Climate Science specialisation

This specialisation consists of the following courses, which are all available by online mode only. Students may vary their enrolment on the basis of prior studies or professional requirements with the approval of the

Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au). This specialisation is not suitable for international on-campus students.

Semester 1	Semester 2
<a href="#">CLI8001 Climate Risk</a>	<a href="#">CLI3302 Adaptation to Climate Change</a>
<a href="#">CLI8204 Global Environmental Systems</a>	<a href="#">CLI8205 Climate and Sustainability</a>
<a href="#">CLI8002 Climate, Human and Environmental Health and Disaster Management</a> *	<a href="#">CLI8003 Climate, Food, Water and Energy Security</a> *

#### Footnotes

\* Two unit course

### Applied Data Science specialisation

This specialisation consists of eight courses which are all available on-campus and online.

Semester 1	Semester 2	Either Semester
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	<a href="#">CSC1401 Foundation Programming</a> *
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	<a href="#">CSC8002 Big Data Management</a>	<a href="#">CIS8008 Business Intelligence</a>
<a href="#">CSC8004 Data Mining</a>		<a href="#">STA8170 Statistics for Quantitative Researchers</a> *

#### Footnotes

\*\* This course will be replaced by CSC8450 in 2022

\* Semester 1 entry is only available if students have completed ([STA8170](#) or [STA2300](#)) and [CSC1401](#) in their previous study.

### Environment and Sustainability specialisation

This specialisation consists of the following eight core courses which are all available in online mode. Students may vary their enrolment on the basis of prior studies or professional requirements with the approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au). This specialisation is not suitable for international on-campus students.

Semester 1	Semester 2
<a href="#">REN8101 Environment, Society and Sustainability</a>	<a href="#">REN8202 Conservation for Sustainable Futures</a>
<a href="#">CLI8204 Global Environmental Systems</a>	<a href="#">CLI8205 Climate and Sustainability</a>
<a href="#">CLI3301 Climate and Environment Risk Assessment</a>	<a href="#">REN8203 Sustainability Science</a>
<a href="#">SCI8103 Research Fundamentals and Ethics</a>	And one of: <ul style="list-style-type: none"> <li>• <a href="#">REN3301 Biodiversity and Conservation</a></li> <li>• <a href="#">REN3302 Sustainable Resource Use</a></li> </ul>

### Mathematics and Statistics specialisation

This specialisation consists of eight units of study. The courses studied will depend on the student's background in mathematics.

Students without [MAT1102](#) (S1) and [STA8170](#) (S1, S2) may not be able to complete in one year.

Students must complete eight courses from the following table. At least four courses must be at Level 8. Students may seek approval from the Discipline Coordinator to enrol in courses not listed in this table.

## Semester 1 Courses

Level 1	Level 2	Level 3	Level 8
<a href="#">MAT1101 Discrete Mathematics for Computing</a>	<a href="#">MAT2409 High Performance Numerical Computing</a>	<a href="#">MAT3105 Harmony of Partial Differential Equations</a>	<a href="#">MAT8180 Mathematics/Statistics Complementary Studies A</a>
<a href="#">MAT1102 Algebra and Calculus I</a>	<a href="#">ENM2600 Advanced Engineering Mathematics</a>	<a href="#">MAT3201 Operations Research 2</a>	<a href="#">STA8180 Advanced Statistics A</a>
<a href="#">ENM1600 Engineering Mathematics</a>		<a href="#">SCI3302 Industry Placement</a>	<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>
<a href="#">CSC1401 Foundation Programming</a>	<a href="#">STA2301 Distribution Theory</a> **	<a href="#">STA3300 Experimental Design</a>	<a href="#">STA8170 Statistics for Quantitative Researchers</a>

### Footnotes

\*\* The on-campus offering of this course will not be available in 2021

## Semester 2 Courses

Level 1	Level 2	Level 3	Level 8
<a href="#">ENM1600 Engineering Mathematics</a>	<a href="#">MAT2100 Algebra and Calculus II</a>	<a href="#">MAT3103 Mathematical Modelling and Dynamical Systems</a>	<a href="#">MAC8901 Issues in Teaching Mathematics</a>
<a href="#">MAT1100 Foundation Mathematics</a>	<a href="#">CSC2410 Computational Thinking with Python</a>	<a href="#">MAT3104 Mathematical Modelling in Financial Economics</a>	<a href="#">MAT8190 Mathematics/Statistics Complementary Studies B</a>
	<a href="#">STA2302 Statistical Inference</a>	<a href="#">SCI3302 Industry Placement</a>	<a href="#">STA8190 Advanced Statistics B</a>
	<a href="#">MAT2200 Operations Research 1</a>	<a href="#">STA3301 Statistical Models</a>	<a href="#">STA8170 Statistics for Quantitative Researchers</a>

## Physics and Astronomy specialisation

This specialisation consists of eight units of study (six (6) core courses and one (1) approved two-unit course). Students may vary their enrolment on the basis of prior studies or professional requirements with the approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au). This specialisation is not suitable for international on-campus students.

Semester 1	Semester 2
<a href="#">PHY1101 Astronomy 1</a>	<a href="#">PHY1107 Astronomy 2</a>
<a href="#">PHY1104 Physics 1</a>	<a href="#">PHY1911 Physics 2</a>
<a href="#">SCI8103 Research Fundamentals and Ethics</a>	<a href="#">SCI8102 Research Skills</a>
<b>Plus one two-unit course selected from the following:</b>	
<a href="#">PHY8001 Observational Astronomy</a>	<a href="#">PHY8003 Galactic Astronomy and Cosmology</a>
<a href="#">PHY8002 Planetary Science</a>	<a href="#">PHY8004 Stellar Astronomy</a>

## Sport and Exercise specialisation

This specialisation consists of four compulsory courses (five units) and three approved courses.

Compulsory Courses (five units)	Approved Courses (choose three)
<a href="#">SES8005 Advanced Exercise Physiology</a>	<a href="#">SES8008 Advanced Anatomy and Physiology</a>
<a href="#">SES8006 Advanced Exercise Programming and Rehabilitation</a>	<a href="#">SES8001 Advanced Biomechanics</a>
<a href="#">SES8007 Advanced Exercise Assessment and Delivery</a>	<a href="#">SES8003 Advanced Motor Control and Learning</a>
<a href="#">MSC8001 Research Project I</a> ^	<a href="#">PSY3250 Sport and Exercise Psychology</a>
	<a href="#">SES1101 Growth, Development and Lifespan</a>
	<a href="#">SES2203 Physical Activity and Health</a>
	<a href="#">SES1103 Nutrition and Exercise</a>
	<a href="#">SES3206 Strength Training and Conditioning</a>

#### Footnotes

^ Two-unit course.

## General specialisation

This specialisation enables students who have completed at least 8 courses with at least 4 courses at Level 8 from courses within other Graduate Diploma of Science specialisations to exit from the [Master of Science](#). Students can use completed courses that meet the program objectives of the Graduate Diploma of Science to exit with that qualification.

## 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. Students will need internet access to retrieve course materials, undertake assessment and participate in course online activities.

## Residential schools

The attendance requirement of residential schools within this degree is indicated by the following letters: R = Recommended; HR = Highly Recommended; M = Mandatory. To find out more about [residential schools](#), visit the [Residential School Schedule](#) to view specific dates for your degree, or visit the [Policy and Procedure Library](#).

Sport and Exercise specialisation: For all modes there will be on-campus and practical attendance requirements for some courses. In order to successfully complete the program students must be able to fulfil any designated practical attendance requirements of a one week residential school in each year.

## Agricultural Science (approved course)

- [BIO3318 Plant Microbe Interactions](#)

## Sport and Exercise Specialisation

### Core Courses:

- [SES8005 Advanced Exercise Physiology](#)
- [SES8006 Advanced Exercise Programming and Rehabilitation](#)
- [SES8007 Advanced Exercise Assessment and Delivery](#)

### Approved Courses:

- [SES3206 Strength Training and Conditioning](#)
- [SES8001 Advanced Biomechanics](#)
- [SES8003 Advanced Motor Control and Learning](#)
- [SES8008 Advanced Anatomy and Physiology](#)



## Articulation

Graduate Diploma of Science students may articulate to the [Master of Science](#) coursework program with further completion of eight courses, as required by that program.

A student successfully completing all courses in the Graduate Diploma of Science program will receive full credit towards the [Master of Science](#) in the same specialisation. Students intending to continue with the Master of Science must apply for separate admission and may EITHER graduate with a Graduate Diploma of Science and receive full credit as exemptions into the Master of Science, OR choose not to graduate with the Graduate Diploma, in order to transfer their grades, maintain their GPA and articulate into the Masters of Science and ultimately qualify from this higher award only. Students who wish to transfer their grades and maintain their GPA into the Master of Science, must advise the Faculty in writing ([usq.support@usq.edu.au](mailto:usq.support@usq.edu.au)) of their intention to articulate and this must occur prior to completion of the Graduate Diploma of Science.

Graduate Diploma of Science students may articulate to the [Master of Science \(Research\)](#) program if they meet other requirements for entry into that program. Students must advise the Faculty in writing ([usq.support@usq.edu.au](mailto:usq.support@usq.edu.au)) of their intention to articulate to the [Master of Science \(Research\)](#) and should seek the advice of the Program Coordinator with respect to transfer or application for course exemptions prior to graduation from the Graduate Diploma of Science.

## Exit points

Students may exit with the [Graduate Certificate of Science](#) if the courses completed satisfy the requirements of a Graduate Certificate of Science specialisation.

Sport and Exercise specialisation - students may exit with the [Graduate Certificate of Sport and Exercise](#) if the courses completed satisfy the requirements of the Graduate Certificate of Sport and Exercise.

Students should consult the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au) should they wish to exit to ensure they satisfy requirements for the Graduate Certificate.

## Credit

Exemptions/credit will be assessed based on the [USQ Credit and Exemption Procedure](#).

### **Sport and Exercise specialisation:**

Exemption of four units may be granted if student has completed the [Graduate Certificate of Sport and Exercise](#) offered by USQ.

## Enrolment

Enrolment patterns will need to be determined for individual students. On acceptance into the program, students must submit an enrolment pattern for approval to the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au). Pre-requisite courses should be taken as a guide to the assumed knowledge required for a course. It is the student's responsibility to ensure that they have the assumed knowledge before enrolling in a particular course.

### **Agricultural Science specialisation recommended enrolment pattern - full-time (2 Semesters, S1 entry)**

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.

Note: This specialisation is not available for International on-campus students as core courses are available in online mode only.

The recommended enrolment pattern for this specialisation is a recommended example. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements



to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au)

Course	Year of program and semester in which course is normally studied						Residential school	Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)			
	Year	Sem	Year	Sem	Year	Sem		
<b>Year 1, Semester 1</b>								
<a href="#">CLI8001 Climate Risk</a>						1	1	
<a href="#">AGR8001 Food Security in the 21st Century</a>	1	1				1	1	
<b>Choose two approved courses: #</b>								
<a href="#">AGR2303 Agronomy</a>	1	1				1	1	
<a href="#">AGR3303 Agricultural Materials and Post-Harvest Technologies</a>	1	1				1	1	
<a href="#">AGR4305 Agricultural Soil Mechanics</a>	1	1				1	1	
<a href="#">SCI3302 Industry Placement</a> ^	1	3	1	1,2,3				Pre-requisite: Completion of 2nd year (or 2 years full time study in a relevant area)
<b>Year 1, Semester 2</b>								
<a href="#">AGR8003 Critical Issues in Agriculture</a>	1	2				2	2	
<a href="#">AGR8002 Emerging Technologies in Agriculture</a>	1	2				2	2	
<b>Choose two approved courses: #</b>								
<a href="#">BIO3318 Plant Microbe Interactions</a> *	1	2	1	2				HR Pre-requisite: <a href="#">BIO1101</a> or <a href="#">BIO1100</a> or Students must be enrolled in one of the following Programs: <a href="#">GCSC</a> or <a href="#">GDSI</a> or <a href="#">MSCN</a> .
<a href="#">ENV4106 Irrigation Science</a>	1	2				1	2	Pre-requisite: <a href="#">AGR3304</a> or Students must be enrolled in one of the following Programs: <a href="#">GCEN</a> or <a href="#">GCSC</a> or <a href="#">GDSI</a> or <a href="#">METC</a> or <a href="#">MEPR</a> or <a href="#">GCNS</a> or <a href="#">GDNS</a> or <a href="#">MENS</a> or <a href="#">MSCN</a> .
<a href="#">BIO8201 Biology Foundations</a>						1	2	
<a href="#">SCI3302 Industry Placement</a> ^	1	3	1	1,2,3				Pre-requisite: Completion of 2nd year (or 2 years full time study in a relevant area)
<a href="#">REN3302 Sustainable Resource Use</a>	1	2				1	2	

#### Footnotes

- # Students should ensure that their choice of courses satisfy the program requirements of at least 4 Level 8 courses.  
^ [SCI3302 Industry Placement](#) may be available subject to approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au) and availability of relevant placement.  
\* This offering has a highly recommended residential school (linked to an assessment item and non-attendance will mean a student misses an element for assessment preparation or an element of assessment).

### Agricultural Science specialisation recommended enrolment pattern - part-time (4 Semesters, S1 or S2 entry)

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.

Note: This specialisation is not available for International on-campus students as core courses are available in online mode only.

The recommended enrolment pattern for this specialisation is a recommended example. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements

to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au)

Course	Year of program and semester in which course is normally studied						Residential school	Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)			
	Year	Sem	Year	Sem	Year	Sem		
<b>Year 1</b>								
Approved Course 1 #	1	1			1	1		
<a href="#">AGR8001 Food Security in the 21st Century</a>	1	1			1	1		
<a href="#">AGR8002 Emerging Technologies in Agriculture</a>	1	2			1	2		
Approved Course 2 #	1	2			1	2		
<b>Year 2</b>								
<a href="#">CLI8001 Climate Risk</a>					2	1		
Approved Course 3 #	2	1			2	1		
<a href="#">AGR8003 Critical Issues in Agriculture</a>	2	2			2	2		
Approved Course 4 #	2	2			2	2		
<b>Approved Courses include: #</b>								
<a href="#">AGR2303 Agronomy</a>		1				1		
<a href="#">AGR3303 Agricultural Materials and Post-Harvest Technologies</a>		1				1		
<a href="#">AGR4305 Agricultural Soil Mechanics</a>		1				1		
<a href="#">SCI3302 Industry Placement</a>		3		1,2,3				Pre-requisite: Completion of 2nd year (or 2 years full time study in a relevant area)
<a href="#">BIO3318 Plant Microbe Interactions *</a>		2		2			HR	Pre-requisite: <a href="#">BIO1101</a> or <a href="#">BIO1100</a> or Students must be enrolled in one of the following Programs: GCSC or GDSI or MSCN.
<a href="#">ENV4106 Irrigation Science</a>		2				2		Pre-requisite: <a href="#">AGR3304</a> or Students must be enrolled in one of the following Programs: GCEN or GCSC or GDSI or METC or MEPR or GCNS or GDNS or MENS or MSCN.
<a href="#">BIO8201 Biology Foundations</a>						2		
<a href="#">REN3302 Sustainable Resource Use</a>		2				2		

#### Footnotes

- # Selection of potential approved courses should be discussed with the Program Coordinator. Students should ensure that their choice of courses satisfy the program requirements of at least 4 Level 8 courses.
- \* This offering has a highly recommended residential school (linked to an assessment item and non-attendance will mean a student misses an element for assessment preparation or an element of assessment).

### Applied Climate Science specialisation recommended enrolment pattern - full-time S1 or S2 entry

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CLI8001 Climate Risk</a>					1	1	

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CLI8204 Global Environmental Systems</a>					1	1	
<a href="#">CLI8002 Climate, Human and Environmental Health and Disaster Management</a> *					1	1	
<a href="#">CLI3302 Adaptation to Climate Change</a>					1	2	
<a href="#">CLI8205 Climate and Sustainability</a>					1	2	
<a href="#">CLI8003 Climate, Food, Water and Energy Security</a> *					1	2	

#### Footnotes

\* Two unit course.

## Applied Climate Science specialisation recommended enrolment pattern - part-time S1 or S2 entry

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CLI8001 Climate Risk</a>					1	1	
<a href="#">CLI8204 Global Environmental Systems</a>					1	1	
<a href="#">CLI8003 Climate, Food, Water and Energy Security</a> *					1	2	
<a href="#">CLI8002 Climate, Human and Environmental Health and Disaster Management</a> *					2	1	
<a href="#">CLI8205 Climate and Sustainability</a>					2	2	
<a href="#">CLI3302 Adaptation to Climate Change</a>					2	2	

#### Footnotes

\* Two unit course

## Applied Data Science specialisation recommended enrolment pattern - full-time S1 entry

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.

**Only available to students who have completed [CSC1401 Foundation Programming](#) and [STA8170 Statistics for Quantitative Researchers](#) (or [STA2300](#)) in previous study.**

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CIS8008 Business Intelligence</a>	1	1			1	1	
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	1	1			1	1	Pre-requisite: Students must be enrolled in one of the following Programs: GDT1 or GCSC or MCTN or GCSC or GDSI or MSCN or MADS.
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	1	1			1	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or <a href="#">STA2300</a> or <a href="#">STA1003</a>
<a href="#">CSC8004 Data Mining</a>	1	1			1	1	Pre-requisite: ( <a href="#">STA2300</a> or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) and <a href="#">CSC1401</a>
<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	1	2			1	2	

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CSC8002 Big Data Management</a> *	1	2			1	2,3	Pre-requisite or Co-requisite: <a href="#">CSC1401</a> and (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) or equivalent program and statistical knowledge and skills.
Approved course — One STA course at level 2 or above					1	2	
Approved course — One CSC course at level 2 or above	1	2			1	2	

#### Footnotes

\*\* This course will be replaced by CSC8450 in 2022

\* Unavailable on campus at Springfield in S2, 2021

## Applied Data Science specialisation recommended enrolment pattern - part-time S1 entry

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.

**Only available to students who have completed [CSC1401 Foundation Programming](#) and [STA8170 Statistics for Quantitative Researchers](#) (or STA2300) in previous study.**

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CIS8008 Business Intelligence</a>	1	1			1	1,2	
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	1	1			1	1	Pre-requisite: Students must be enrolled in one of the following Programs: GDTI or GCSC or MCTN or GCSC or GDSI or MSCN or MADS.
<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	1	2			1	2	
<a href="#">CSC8002 Big Data Management</a> *	1	2			1	2,3	Pre-requisite or Co-requisite: <a href="#">CSC1401</a> and (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) or equivalent program and statistical knowledge and skills.
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	2	1			2	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or STA2300 or <a href="#">STA1003</a>
<a href="#">CSC8004 Data Mining</a>	2	1			2	1	Pre-requisite: (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) and <a href="#">CSC1401</a>
Approved Course — One STA course at level 2 or above	2	2			2	2	
Approved Course — One CSC course at level 2 or above	2	2			2	2	

#### Footnotes

\*\* This course will be replaced by CSC8450 in 2022

\* Unavailable on campus at Springfield in S2, 2021

## Applied Data Science specialisation recommended enrolment pattern - part-time S1 entry (without CSC1401 and STA8170 (or STA2300) in previous study)

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1, Semester 1</b>							
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	1	1			1	1	Pre-requisite: Students must be enrolled in one of the following Programs: GDT1 or GCSC or MCTN or GCSC or GDSI or MSCN or MADS.
<a href="#">STA8170 Statistics for Quantitative Researchers</a>	1	1			1	1,2	Enrolment is not permitted in <a href="#">STA8170</a> if <a href="#">STA2300</a> or <a href="#">STA1003</a> has been previously completed.
<b>Year 1, Semester 2</b>							
<a href="#">CSC1401 Foundation Programming</a>	1	2			1	1,2,3	
<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	1	2			1	2	
<b>Year 2, Semester 1</b>							
<a href="#">CSC8004 Data Mining</a>	2	1			2	1	Pre-requisite: ( <a href="#">STA2300</a> or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) and <a href="#">CSC1401</a>
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	2	1			2	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or <a href="#">STA2300</a> or <a href="#">STA1003</a>
<b>Year 2, Semester 2</b>							
<a href="#">CIS8008 Business Intelligence</a>					2	1,2	
<a href="#">CSC8002 Big Data Management</a> *	2	2			2	2,3	Pre-requisite or Co-requisite: <a href="#">CSC1401</a> and ( <a href="#">STA2300</a> or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) or equivalent program and statistical knowledge and skills.

### Footnotes

\*\* This course will be replaced by CSC8450 in 2022

\* Unavailable on campus at Springfield in S2, 2021

## Applied Data Science specialisation recommended enrolment pattern - full-time S2 entry (requires Program Coordinator approval)

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1, Semester 2</b>							
<a href="#">CSC1401 Foundation Programming</a>	1	2			1	1,2,3	
<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	1	2			1	2	
<a href="#">CSC8002 Big Data Management</a> *	1	2			1	2,3	Pre-requisite or Co-requisite: <a href="#">CSC1401</a> and ( <a href="#">STA2300</a> or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) or equivalent program and statistical knowledge and skills.
<a href="#">STA8170 Statistics for Quantitative Researchers</a>					1	1,2	Enrolment is not permitted in <a href="#">STA8170</a> if <a href="#">STA2300</a> or <a href="#">STA1003</a> has been previously completed.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1, Semester 1</b>							
<a href="#">CIS8008 Business Intelligence</a>					1	1,2	
<a href="#">CSC8004 Data Mining</a>	1	1			1	1	Pre-requisite: (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) and <a href="#">CSC1401</a>
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	1	1			1	1	Pre-requisite: Students must be enrolled in one of the following Programs: GDTI or GCSC or MCTN or GCSC or GDSI or MSCN or MADS.
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	1	1			1	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or STA2300 or <a href="#">STA1003</a>

#### Footnotes

\* Unavailable on campus at Springfield in S2, 2021

\*\* This course will be replaced by CSC8450 in 2022

## Applied Data Science specialisation recommended enrolment pattern - part-time S2 entry

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1, Semester 2</b>							
<a href="#">CSC1401 Foundation Programming</a>	1	2			1	1,2,3	
<a href="#">CSC8001 Introduction to Data Science and Visualisation</a>	1	2			1	2	
<b>Year 1, Semester 1</b>							
<a href="#">STA8170 Statistics for Quantitative Researchers</a> *	1	1			1	1,2	Enrolment is not permitted in <a href="#">STA8170</a> if S TA2300 or <a href="#">STA1003</a> has been previously completed.
<a href="#">CSC8500 Advanced Relational Database Design and Technology</a> **	1	1			1	1	Pre-requisite: Students must be enrolled in one of the following Programs: GDTI or GCSC or MCTN or GCSC or GDSI or MSCN or MADS.
<b>Year 2, Semester 2</b>							
<a href="#">CSC8002 Big Data Management</a> #	2	2			2	2,3	Pre-requisite or Co-requisite: <a href="#">CSC1401</a> and (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) or equivalent program and statistical knowledge and skills.
<a href="#">CIS8008 Business Intelligence</a>					2	1,2	
<b>Year 2, Semester 1</b>							
<a href="#">CSC8004 Data Mining</a>	2	1			2	1	Pre-requisite: (STA2300 or <a href="#">STA1003</a> or <a href="#">STA8170</a> ) and <a href="#">CSC1401</a>
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	2	1			2	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or STA2300 or <a href="#">STA1003</a>

#### Footnotes

\* If STA2300 has been completed previously, contact the Program Coordinator to choose an alternative course to STA8170.

\*\* This course will be replaced by CSC8450 in 2022

# Unavailable on campus at Springfield in S2, 2021



## Environment and Sustainability specialisation recommended enrolment pattern - full-time S1 or S2 entry

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1, Semester 1</b>							
<a href="#">REN8101 Environment, Society and Sustainability</a>					1	1	
<a href="#">CLI8204 Global Environmental Systems</a>					1	1	
<a href="#">CLI3301 Climate and Environment Risk Assessment</a>					1	1	
<a href="#">SCI8103 Research Fundamentals and Ethics</a>					1	1	Pre-requisite: Students must be enrolled in one of the following programs: MSCN or M SCR or MCTN or MADS or GCSC or GDSI or DPHD or its equivalent. Enrolment is not permitted in <a href="#">SCI8103</a> if <a href="#">SCI4405</a> has been previously completed.
<b>Year 1, Semester 2 (or Semester 2 entry)</b>							
<a href="#">CLI8205 Climate and Sustainability</a>					1	2	
<a href="#">REN8202 Conservation for Sustainable Futures</a>					1	2	
<a href="#">REN8203 Sustainability Science</a>					1	2	Pre-requisite: <a href="#">REN8101</a> or <a href="#">REN8202</a> or <a href="#">REN3302</a> or <a href="#">REN3301</a> or <a href="#">CLI8204</a> or <a href="#">CLI8205</a> or <a href="#">ECO8011</a>
And one of:							
<a href="#">REN3301 Biodiversity and Conservation</a>	1	2			1	2	
<a href="#">REN3302 Sustainable Resource Use</a>	1	2			1	2	

## Environment and Sustainability specialisation recommended enrolment pattern - part-time S1 or S2 entry

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.

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Year 1</b>							
<a href="#">REN8101 Environment, Society and Sustainability</a>					1	1	
<a href="#">SCI8103 Research Fundamentals and Ethics</a>					1	1	Pre-requisite: Students must be enrolled in one of the following programs: MSCN or M SCR or MCTN or MADS or GCSC or GDSI or DPHD or its equivalent. Enrolment is not permitted in <a href="#">SCI8103</a> if <a href="#">SCI4405</a> has been previously completed.
<a href="#">REN8202 Conservation for Sustainable Futures</a>					1	2	
And one of:							
<a href="#">REN3301 Biodiversity and Conservation</a>	1	2			1	2	
<a href="#">REN3302 Sustainable Resource Use</a>	1	2			1	2	
<b>Year 2</b>							
<a href="#">CLI3301 Climate and Environment Risk Assessment</a>					2	1	

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">CLI8204 Global Environmental Systems</a>					2	1	
<a href="#">CLI8205 Climate and Sustainability</a>					2	2	
<a href="#">REN8203 Sustainability Science</a>					2	2	Pre-requisite: <a href="#">REN8101</a> or <a href="#">REN8202</a> or <a href="#">REN3302</a> or <a href="#">REN3301</a> or <a href="#">CLI8204</a> or <a href="#">CLI8205</a> or <a href="#">ECO8011</a>

## Mathematics and Statistics specialisation recommended enrolment pattern - full-time S1 entry (with QSSSS Maths B)

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.

The recommended enrolment pattern for this specialisation is an example only for S1 enrolment. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator.

**This pattern assumes students have current skills at the level of Queensland Senior Secondary School Studies Maths B or equivalent. Students without this knowledge should contact the Program Coordinator for advice and may have to study part-time.**

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Semester 1</b>							
<a href="#">MAT1102 Algebra and Calculus I</a> #	1	1			1	1	
<a href="#">STA8170 Statistics for Quantitative Researchers</a> < # \$	1	1			1	1,2	Enrolment is not permitted in <a href="#">STA8170</a> if <a href="#">STA2300</a> or <a href="#">STA1003</a> has been previously completed.
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	1	1			1	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or <a href="#">STA2300</a> or <a href="#">STA1003</a>
<a href="#">MAT8180 Mathematics/Statistics Complementary Studies A</a> # *	1	1			1	1	
<b>Semester 2</b>							
<a href="#">MAT2200 Operations Research 1</a> #	1	2			1	2	Pre-requisite: <a href="#">MAT1102</a> or <a href="#">ENM1600</a> or equivalent or approval from the examiner. Enrolment is not permitted in <a href="#">MAT2200</a> if <a href="#">MAT1200</a> has been previously completed.
<a href="#">STA8190 Advanced Statistics B</a> * \$					1	2	
<a href="#">MAT2100 Algebra and Calculus II</a> #	1	2			1	2	Pre-requisite: <a href="#">MAT1102</a> or <a href="#">MAT1502</a> or <a href="#">ENM1600</a> or Students must be enrolled in the following program: <a href="#">MSCN</a> or <a href="#">MEPR</a> or <a href="#">BSED</a>
<a href="#">CSC2410 Computational Thinking with Python</a>	1	2			1	2	

### Footnotes

- # Recommended for students wanting to teach mathematics.
- < If [STA2300](#) has been completed previously, contact the Program Coordinator to choose an alternative course to [STA8170](#).
- \$ Recommended for students wanting to specialise in statistics.
- \* This course is topic based. Students should select their topic from the course specification and email the examiner for approval prior to enrolment.

## Mathematics and Statistics specialisation recommended enrolment pattern - full-time S1 entry (without MAT1102 or STA1003 (or STA8170))

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.

The recommended enrolment pattern for this specialisation is an example only for S1 enrolment. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator.

**This pattern requires students to have knowledge equivalent to [MAT1102 Algebra and Calculus I](#) and [\(STA8170 Statistics for Quantitative Researchers](#) or [STA2300](#) ).**

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Semester 1</b>							
<a href="#">ENM2600 Advanced Engineering Mathematics</a>	1	1			1	1	Pre-requisite: <a href="#">ENM1600</a> or Students must be enrolled in one of the following Programs: GCEN or METC or MENS or GDNS or MEPR or MSCN
<a href="#">STA8180 Advanced Statistics A</a> \$ *					1	1	
<a href="#">STA8005 Multivariate Analysis for High-Dimensional Data</a>	1	1			1	1	Pre-requisite or Co-requisite: <a href="#">STA8170</a> or <a href="#">STA2300</a> or <a href="#">STA1003</a>
<a href="#">MAT3201 Operations Research 2</a> < #	1	1			1	1	Pre-requisite: <a href="#">MAT1200</a> or <a href="#">MAT2200</a> or Students must be enrolled in one of the following Programs: MSCN or GDSI
<b>Semester 2</b>							
<a href="#">MAT8190 Mathematics/Statistics Complementary Studies B</a> # *	1	2			1	2	
<a href="#">STA8190 Advanced Statistics B</a> \$ *					1	2	
<a href="#">MAT2200 Operations Research 1</a> #	1	2			1	2	Pre-requisite: <a href="#">MAT1102</a> or <a href="#">ENM1600</a> or equivalent or approval from the examiner. Enrolment is not permitted in <a href="#">MAT2200</a> if <a href="#">MAT1200</a> has been previously completed.
<a href="#">CSC2410 Computational Thinking with Python</a>	1	2			1	2	

### Footnotes

\$ Recommended for students wanting to specialise in statistics.

\* This course is topic based. Students should select their topic from the course specification, ensuring they have any prerequisites stated for their chosen topic, and email the examiner for approval prior to enrolment.

< The on-campus offering of this course is offered in odd—numbered years only.

# Recommended for students wanting to teach mathematics.

## Mathematics and Statistics specialisation recommended enrolment pattern - part-time S1 entry

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.

The recommended enrolment pattern for this specialisation is an example only for S1 enrolment. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the

requirements to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au).

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<b>Semester 1</b>							
STA8170 Statistics for Quantitative Researchers <sup>**# \$</sup>	1	1			1	1,2	Enrolment is not permitted in STA8170 if STA2300 or STA1003 has been previously completed.
MAT1102 Algebra and Calculus I <sup>#</sup>	1	1			1	1	
<b>Semester 2</b>							
MAT2100 Algebra and Calculus II <sup>#</sup>	1	2			1	2	Pre-requisite: MAT1102 or MAT1502 or ENM1600 or Students must be enrolled in the following program: MSCN or MEPR or BSED
CSC2410 Computational Thinking with Python	1	2			1	2	
<b>Choose four (4) of the following (at least three (3) of which must be at Level 8):</b>							
STA2301 Distribution Theory <sup>## \$</sup>	2	1			2	1	Pre-requisite: (STA2300 or STA1003 or equivalent) and (MAT1102 or ENM1600)
STA3300 Experimental Design <sup>\$</sup>	2	1			2	1	Pre-requisite: STA2300 or STA1003 or equivalent or approval of examiner
STA8005 Multivariate Analysis for High-Dimensional Data <sup># ^</sup>	2	1			2	1	Pre-requisite or Co-requisite: STA8170 or STA2300 or STA1003
STA2302 Statistical Inference <sup>\$</sup>	2	2			2	2	Pre-requisite: STA2301
STA3301 Statistical Models <sup>\$</sup>	2	2			2	2	Pre-requisite: STA3300 or approval of examiner or Students must have completed STA8170 and be enrolled in one of the following Programs: GCSC or GDSI or MSCN or MADS or MSCR or DPHD.
STA8180 Advanced Statistics A <sup>\$ *</sup>					2	1	
STA8190 Advanced Statistics B <sup>\$ *</sup>					2	2	
MAT2409 High Performance Numerical Computing	2	1			2	1	Pre-requisite: (CSC2410 or CSC1401) and (MAT1102 or ENM1600) or Students must be enrolled in one of the following Programs: MPIT or MCOT or MCTE
MAT2200 Operations Research 1 <sup>#</sup>	2	2			2	2	Pre-requisite: MAT1102 or ENM1600 or equivalent or approval from the examiner. Enrolment is not permitted in MAT2200 if MAT1200 has been previously completed.
MAT3105 Harmony of Partial Differential Equations <sup># &lt;</sup>	2	1			2	1	Pre-requisite: ENM2600 or MAT2100 or MAT2500
MAT3103 Mathematical Modelling and Dynamical Systems <sup># &lt;</sup>	2	2			2	2	Pre-requisite: MAT2100 or MAT2500 or ENM2600
MAT3201 Operations Research 2 <sup>&gt; #</sup>	2	1			2	1	Pre-requisite: MAT1200 or MAT2200 or Students must be enrolled in one of the following Programs: MSCN or GDSI
MAT3104 Mathematical Modelling in Financial Economics <sup># &gt;</sup>	2	2			2	2	Pre-requisite: (STA2300 or STA1003 or equivalent) and (MAT2100 or MAT2500 or ENM2600)
MAC8901 Issues in Teaching Mathematics <sup># %</sup>	2	2			2	2	
SCI3302 Industry Placement <sup>@</sup>	2	3		1,2,3			Pre-requisite: Completion of 2nd year (or 2 years full time study in a relevant area)

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">MAT8180 Mathematics/Statistics Complementary Studies A</a> # \$ *	2	1			1	1	
<a href="#">MAT8190 Mathematics/Statistics Complementary Studies B</a> # \$ *	2	2			1	2	

#### Footnotes

- \*\* If STA2300 has been completed previously, contact the Program Coordinator to choose an alternative course to STA8170.  
# Recommended for students wanting to teach mathematics.  
\$ Recommended for students wanting to specialise in statistics.  
## The on-campus offering of this course will not be available in 2021  
^ recommended for teachers wanting to improve their content knowledge in statistics.  
\* This course is topic based. Students should select their topic from the course specification and email the examiner for approval prior to enrolment.  
< The on-campus offering of this course is offered in even years only.  
> The on-campus offering of this course is offered in odd—numbered years only.  
> Recommended for teachers only. Teachers wishing to improve their content knowledge in statistics should also complete [STA8005](#).  
@ This course is available subject to approval of the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au); and availability of a relevant placement.

## Physics and Astronomy specialisation recommended enrolment pattern - full-time S1 or S2 entry

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.

The recommended enrolment pattern for this specialisation is a recommended example. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au).

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">PHY1101 Astronomy 1</a> *	1	1			1	1	
<a href="#">PHY1104 Physics 1</a>	1	1			1	1	Co-requisite: ( <a href="#">MAT1102</a> or <a href="#">ENM2600</a> ) or S students must be enrolled in one of the following Programs: MSCN or GDSI or GCSC
<a href="#">SCI8103 Research Fundamentals and Ethics</a>					1	1	Pre-requisite: Students must be enrolled in one of the following programs: MSCN or M SCR or MCTN or MADS or GCSC or GDSI or DPHD or its equivalent. Enrolment is not permitted in <a href="#">SCI8103</a> if <a href="#">SCI4405</a> has been previously completed.
<a href="#">SCI8102 Research Skills</a> ^					1	1,2	
<a href="#">PHY1107 Astronomy 2</a> *	1	2			1	2	
<a href="#">PHY1911 Physics 2</a>	1	2			1	2	Co-requisite: ( <a href="#">MAT2100</a> or <a href="#">ENM1600</a> ) or S students must be enrolled in one of the following Programs: MSCN or GDSI or GCSC
<b>Approved courses - Choose one of the following two-unit courses:</b>							
<a href="#">PHY8001 Observational Astronomy</a> †#					1	1	
<a href="#">PHY8002 Planetary Science</a> †#					1	1	
<a href="#">PHY8003 Galactic Astronomy and Cosmology</a> †#					1	2	
<a href="#">PHY8004 Stellar Astronomy</a> †#					1	2	

#### Footnotes

- \* Astronomical observations for each course are made remotely via internet access to USQ's Mt Kent Observatory. Voluntary field nights will also be made available.
- ^ SCI8102 can be taken in S2 and an approved course taken in S1.
- † Two unit course.
- # Astronomical observations for each course are made remotely via internet access to USQ's Mt Kent Observatory.

## Physics and Astronomy Specialisation recommended enrolment pattern - part-time S1 or S2 entry

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.

The recommended enrolment pattern for this specialisation is a recommended example. Students may vary or select their own pattern, keeping in mind any course pre-requisites, timetable constraints and the requirements to graduate outlined above in the Program Structure. If unsure about a suitable enrolment pattern, students should contact the Program Coordinator via [usq.support@usq.edu.au](mailto:usq.support@usq.edu.au).

Course	Year of program and semester in which course is normally studied						Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)		
	Year	Sem	Year	Sem	Year	Sem	
<a href="#">PHY1101 Astronomy 1</a> *	1	1			1	1	
<a href="#">PHY1104 Physics 1</a>	1	1			1	1	Co-requisite: ( <a href="#">MAT1102</a> or <a href="#">ENM2600</a> ) or S students must be enrolled in one of the following Programs: MSCN or GDSI or GCSC
<a href="#">PHY1107 Astronomy 2</a> *	1	2			1	2	
<a href="#">PHY1911 Physics 2</a>	1	2			1	2	Co-requisite: ( <a href="#">MAT2100</a> or <a href="#">ENM1600</a> ) or S students must be enrolled in one of the following Programs: MSCN or GDSI or GCSC
<a href="#">SCI8103 Research Fundamentals and Ethics</a>					2	1	Pre-requisite: Students must be enrolled in one of the following programs: MSCN or MSCR or MCTN or MADS or GCSC or GDSI or DPHD or its equivalent. Enrolment is not permitted in <a href="#">SCI8103</a> if <a href="#">SCI4405</a> has been previously completed.
<a href="#">SCI8102 Research Skills</a>					2	2	
<b>Approved courses - Choose one of the following two-unit courses:</b>							
<a href="#">PHY8001 Observational Astronomy</a> †#					2	1	
<a href="#">PHY8002 Planetary Science</a> †#					2	1	
<a href="#">PHY8003 Galactic Astronomy and Cosmology</a> †#					2	2	
<a href="#">PHY8004 Stellar Astronomy</a> †#					2	2	

#### Footnotes

- \* Astronomical observations for each course are made remotely via internet access to USQ's Mt Kent Observatory. Voluntary field nights will also be made available.
- † Two unit course.
- # Astronomical observations for each course are made remotely via internet access to USQ's Mt Kent Observatory.



## Sport and Exercise Specialisation recommended enrolment pattern - full-time S1 or S2 entry

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.

Course	Year of program and semester in which course is normally studied						Residential school	Enrolment requirements
	On-campus (ONC)		External (EXT)		Online (ONL)			
	Year	Sem	Year	Sem	Year	Sem		
<b>Year 1/Semester 1</b>								
<a href="#">SES8005 Advanced Exercise Physiology</a> *	1	1	1	1			M	
<a href="#">SES8006 Advanced Exercise Programming and Rehabilitation</a> ~*	1	1	1	1			M	
Approved course 1 (from approved course list)	1	1				1	1	
Approved course 2 (from approved course list)	1	1				1	1	
<b>Year 1/Semester 2</b>								
<a href="#">SES8007 Advanced Exercise Assessment and Delivery</a> *	1	2	1	2			M	
<a href="#">MSC8001 Research Project I</a> † #	1	1,2				1	1,2	Pre-requisite: Students must be enrolled in one of the following Programs: MCTN or MCOP or MCTE or MSCN or MOCO or MADS or have the approval of their program coordinator
Approved course 3 (from approved course list)	1	2				1	2	
<b>Approved courses: Choose three courses from:</b>								
<a href="#">SES8008 Advanced Anatomy and Physiology</a> *		1		1			M	
<a href="#">SES8001 Advanced Biomechanics</a> *		2		2			M	
<a href="#">SES8003 Advanced Motor Control and Learning</a> *		1		1			M	
<a href="#">PSY3250 Sport and Exercise Psychology</a>						2		Pre-requisite: <a href="#">PSY1010</a> or S students must be enrolled in one of the following programs: GDSI or MSCN
<a href="#">SES1101 Growth, Development and Lifespan</a>		1				1		
<a href="#">SES2203 Physical Activity and Health</a>		2				2		
<a href="#">SES1103 Nutrition and Exercise</a>		2		2				
<a href="#">SES3206 Strength Training and Conditioning</a> *		2		2			M	Pre-requisite: <a href="#">SES2103</a> and <a href="#">SES2104</a>

### Footnotes

- \* Only available in on-campus mode at Ipswich.
- ~ The on-campus offer will not run in 2020
- † Two unit course
- # Only available in on-campus mode at Toowoomba.