

## Master of Science (Bioinformatics) . (MSBN) - MSc(Bioinf)

CRICOS code (International applicants): 056180F

**This program is offered only to continuing students. No new admissions will be accepted. Students who are interested in this study area should [contact us](#).**

	On-campus	Distance education*
<b>Campus:</b>	Toowoomba	-
<b>Fees:</b>	Domestic full fee paying place International full fee paying place	Domestic full fee paying place International full fee paying place
<b>Standard duration:</b>	2 years full-time, 4 years part-time maximum	

### Footnotes

\* All courses, except some Biology courses, may be taken in either day or external mode. Students requiring Biology courses (i.e. those with an IT based background) are required to take such courses in day mode due to the intrinsic lab based nature of Biology courses. Students from the life sciences can complete the program externally.

## Contact us

Current students

Contact the Program Manager (Biological and Physical Sciences), telephone +61 7 4631 1540, email [sciences.enrolment@usq.edu.au](mailto:sciences.enrolment@usq.edu.au) or submit a question via [USQAssist](#).

## Program focus

The aim of this program is to provide previous graduates from the life sciences or IT with a broad and highly multidisciplinary education in mathematical, computational and biological techniques and studies in other emerging areas of interest to them, for example, Systems Biology, Advanced Bioinformatics, Proteomics and Genomics.

## Program aims

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## Program objectives

At the completion of the program, graduates will be able to:

- demonstrate a sound knowledge of some important theories and techniques of bioinformatics and systems biology
- use a wide range of computational and statistical techniques to formulate and solve complex problems from biological and biomedical sciences
- extend and apply computational or statistical tools to scientific and technical research in biology and medicine
- use a range of appropriate computer packages to solve problems in bioinformatics and systems biology developments
- better solve problems and think innovatively, learn new skills independently and efficiently
- demonstrate good communication skills in their professional skill base.

## Admission requirements

Applicants may be admitted to the Master of Science (Bioinformatics) if they:

- hold an Australian Bachelor's degree or equivalent qualification from a recognised university in an area which is related to either information technology, mathematics, statistics or life sciences
- have introductory knowledge of computing generally equivalent to that found in [CSC1402 Foundation Computing](#) and have appropriate communication skills equivalent to those addressed in [CMS1000 Communication and Scholarship](#).

Particular choices of courses within this program may require additional pre-requisite knowledge depending on the applicant's undergraduate degree. In the case of applicants coming from a life science background, a typical pre-requisite to undertake some computing courses will be basic computer programming skills equivalent to [CIS3001 Object-Oriented Programming with Java](#). Applicants coming from an information technology background may require introductory knowledge of molecular biology equivalent to [BIO2209 Cell Biology](#).

### **International Applicants**

International applicants must also have met the [University's English language requirements](#) or have completed the University's [ELICOS/EAP](#).

### **Program fees**

#### **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. You 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](#).

#### **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. You are able to calculate the fees for a particular course via the [Course Fee Finder](#).

### **Program structure**

The Master of Science (Bioinformatics) consists of 12 units of coursework. Courses can be selected from those listed below in the Coursework section, subject to the following conditions:

- BIO2211 Bioinformatics, CSC4501 and CSC8501 are core courses in which all students must enrol
- at least six units higher than Level 3
- at least four units of courses must be at Level 8
- with approval of the Head of Department, at most three units of study, which are not listed in the Coursework section, may be taken from a related area of interest to the student
- all courses, except the Biology courses, may be taken in either on-campus or external mode. Graduates requiring Biology courses (i.e. those with an IT based background) are required to take such courses in on-campus mode due to the laboratory based requirements of Biology courses.

### **Required time limits**

Students have a maximum of 4 years to complete this program.

### **Elective courses**

Students may take up to three units of elective courses other than those in the Coursework section. Study of these courses will require the approval of the Head of Department and will be assessed on the basis of their suitability for the intended program of work of the student by the Program Coordinator.

## Coursework

<b>Core Courses</b>
BIO2211 Bioinformatics
CSC4501
CSC8501
<b>Undergraduate Courses (Levels 2 and 3)</b>
<a href="#">BIO2201 Biochemistry 1</a>
BIO2205
<a href="#">BIO2207 Genetics</a>
<a href="#">BIO2209 Cell Biology</a>
<a href="#">BIO3301 Biochemistry 2</a>
BIO3302 Plant Biochemistry and Biotechnology
BIO3307
<a href="#">BIO3313 Human Physiology and Pharmacology in Disease 1</a>
<a href="#">BIO3315 Medical Microbiology 2</a>
<a href="#">BIO3317 Medical Microbiology 1</a>
<a href="#">CIS3001 Object-Oriented Programming with Java</a>
<a href="#">CSC2401 Algorithms and Data Structures</a>
<a href="#">CSC2406 Web Technology</a>
<a href="#">CSC2408 Software Development Tools</a>
<a href="#">CSC2409 High Performance Numerical Computing</a>
<a href="#">CSC3400 Database Systems</a>
<a href="#">MAT2100 Algebra and Calculus II</a>
<a href="#">MAT3103 Mathematical Modelling for Dynamics</a>
<a href="#">MAT3104 Mathematical Modelling in Financial Economics</a>
<a href="#">MAT3105 Harmony of Partial Differential Equations</a>
<a href="#">STA2300 Data Analysis</a>
<a href="#">STA2301 Distribution Theory</a>
<a href="#">STA2302 Statistical Inference</a>
<a href="#">STA3300 Experimental Design*</a>
<a href="#">STA3301 Statistical Models</a>
<b>Honours Courses (Level 4)</b>
<a href="#">SCI4403 Special Study in Science</a>
<a href="#">SCI4405 Research Practice and Ethics</a>
<b>Masters Courses (Level 8)</b>
<a href="#">CSC8410 Independent Studies in Computing/Mathematics/Statistics A*</a>
<a href="#">CSC8411 Independent Studies in Computing/Mathematics/Statistics B*</a>
MAT8104
<a href="#">MAT8180 Mathematics/Statistics Complementary Studies A*</a>
<a href="#">MAT8190 Mathematics/Statistics Complementary Studies B*</a>
<a href="#">STA8304 Time Series</a>

### Footnotes

- \* Note that the choice of Independent and Complementary study areas will depend on the availability of appropriate staff to supervise the study. Other courses may be added to, or removed from, this list from time to time as new courses are developed on the basis of student demand.

## **IT requirements**

Students should visit the USQ [Recommended Hardware](#) and [Recommended Software](#) sites 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.

## **Exemptions**

Exemptions from courses in the Master of Science (Bioinformatics) may be granted for a maximum of six units of study consistent with USQ regulations. Completed courses used as basis for these exemptions must be similar to those in the Coursework section. Normally these would be drawn from incomplete programs of study. They may be as a result of cross-institutional study.

## **Recommended enrolment pattern**

Upon accepting a place in the program, students must consult the Program Coordinator, about the courses they wish to study. A suitable enrolment pattern for individual students will be constructed (subject to timetabling constraints) at that time.