

Bachelor of Mathematical and Statistical Sciences

Your Guide to a future in Mathematics or Statistics

The BMathStatSc enables maths and stats to be combined with any area across the University. Despite its name it could involve a co-major in areas as diverse as finance, philosophy, computer science, psychology or even Japanese.

The professional streams recognised within the degree are:

- Computer Science Stream
- Applied Statistics Stream
- Economics and Finance Stream

The Possibilities are infinite.

BMathStatSc

Basic Structure

Course Structure

To provide a broad base in mathematics and statistics, students are required to include 60 credit points of mathematics and statistics subjects in their first year. Then, to encourage the combination of mathematics and statistics with a wide range of units from other University discipline areas at second and third-year level, only 40 credit points at second year and 60 credit points at third year will be required to be taken from available mathematics and statistics units. (Students must enrol in the zero credit point unit FSTOOELP: English Language Proficiency. This unit involves a test devised by the Language and Academic Skills Unit and is usually undertaken when students reach second year.)

First Year (120 credit points)

Core units (60 credit points)

- Semester 1, Calculus, Functions and Number Systems MAT11CFN 15 credit points
- Semester 1, Statistical Science STA11SS 15 credit points
- Semester 2, Calculus and Linear Algebra MAT12CLA 15 credit points
- Semester 1 or 2, Discrete Mathematics MAT11DM or MAT12DM 15 credit points

Electives (60 credit points)

The remaining 60 credit points in first year may be chosen from any units offered by the University, as approved by the Course Adviser.

Second Year (120 credit points)

A minimum of 40 credit points must be chosen from available second-year mathematics and second-year statistics units. The remaining 80 credit points may be chosen from any units offered by the University. All enrolments require the approval of the Course Adviser.

Third Year (120 credit points)

A minimum of 60 credit points must be chosen from available third-year mathematics and third-year statistics units. The remaining 60 credit points may be chosen from any units offered by the University. All enrolments require the approval of the Course Adviser.

Honours Year

Suitably qualified students will be permitted to enrol in an honours year in Mathematics or Statistics. There is the flexibility to include course-work material from related disciplines, such as Computer Science and to select a project reflecting a desired vocational orientation.

Contact the Course Adviser

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BMathStatSc Computer Science Stream

By choosing most of their electives from computer science students in the Maths/Stats degree can do a double major in Mathematics and/or Statistics and Computer Science.

Computer Science major

The following combination of units has been approved for a Computer Science major within the Maths/Stats degree. This is, of course, in addition to the four core mathematics and statistics units at first year and the minimum mathematics and/or statistics enrolments at second year and third year of 40 and 60 credit points, respectively.

1st year

Introduction to Object-Oriented Programming using Java CSE11OOJ	15 credit points
Intermediate Object-Oriented Programming using Java CSE12IJA	15 credit points
Systems Programming using C and C++ CSE12SYS	15 credit points
Any elective approved by the course adviser	15 credit points

Total: 60 credit points

2nd year

Algorithms, Data Structures and Compilers CSE21ADC	10 credit points
Artificial Intelligence CSE22AI	10 credit points
Introduction to Professional Communication CSE22COM	10 credit points
Elective 2 nd year CS subject	10 credit points
Any electives approved by the course adviser	40 credit points

Total: 80 credit points

3rd year

3 rd year CS units including CSE30PRJ or CSE32PRO	60 credit points
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Total: 60 credit points

Honours Year

By choosing third-year units carefully, a student doing this stream will be able to qualify for honours in Mathematics or Statistics and in Computer Science. With the approval of the course advisor it is also possible to do some computer science units within the honours year of the Maths/Stats degree.

Accreditation

Students successfully completing a course including the computer science units listed above are able to obtain professional level accreditation with the Australian Computer Science Society.

BMathStatSc

Applied Statistics Stream

Course Structure

In the Applied Statistics Stream 30 credit points at second year and 60 credit points at third year are taken from statistics units. This is, of course, in addition to the four core mathematics and statistics units at first year. This stream provides the student with a major in statistics.

Elective units from any discipline may be taken to give a vocational orientation to the stream. These could include units from Biological Science (particularly Genetics), Health Science (particularly Public Health), Economics/Finance, Psychological Science and Computer Science, as long as any minimum ENTER requirements for these units are met. From 2005, the Applied Statistics Stream is the following.

First Year (120 credit points)

In addition to the four core units, units totalling 60 credit points may be chosen from any units offered by the University, as approved by the Course Adviser.

Second Year (120 credit points)

- Semester 1, Modern Applied Statistics STA21MAS (or STA21AS) 10 credit points
- Semester 2, Models for Data Analysis STA22MDA (or STA22PM) 10 credit points
- Semester 2, Analyses Based on Linear Models STA22LM 10 credit points

Total: 30 credit points

A further 10 credit points of second year mathematics or statistics units must also be taken. It is highly recommended that STA21MS (Medical Statistics, Semester 1, 20Cp) be taken and that STA22LM be replaced by STA22BS (Biostatistics, Semester 2, 20Cp). Note that STA22LM forms half of STA22BS.

The remaining credit points may be chosen from any units offered by the University. All enrolments require the approval of the Course Adviser.

Third Year (120 credit points)

- Semester 1, Analyses Based on Linear Models STA31LM 15 credit points
- Semester 1, Biostatistics STA31BS 15 credit points
- Semester 2, Statistical Inference STA32SI 15 credit points
- Semester 2, Applied Statistics STA32AS 15 credit points

Total: 60 credit points

The remaining 60 credit points may be chosen from any units offered by the University. All enrolments require the approval of the Course Adviser.

Honours Year

Suitably qualified students will be permitted to enrol in an honours year in Mathematics or Statistics. The honours students have the advantage of being able to choose from more than twenty statistics honours units taught at La Trobe, Monash, RMIT and Melbourne universities. All of these honours units are offered under the auspices of the Key Centre for Statistical Sciences.

BMathStatSc Economics and Finance Streams

By replacing the core first-year units MAT11CFN with MAT11CFE and choosing most of their electives from Economics or Finance, students in the Maths/Stats degree can do a double major in mathematics/statistics and economics or finance.

Economics or Finance major

The following combination of units has been approved for an economics or finance major within the Maths/Stats degree.

1st year	Introductory Microeconomics ECO11IMI Introductory Macroeconomics ECO12IMA Calculus and Functions for Economics MAT11CFE	15 credit points 15 credit points 15 credit points
		Total: 45 credit points
2nd year	Finance FIN21FIN Microeconomic Theory ECO21MIT Macroeconomic Theory ECO22MAT	15 credit points 15 credit points 15 credit points
		Total: 45 credit points
3rd year	(a) Finance major International Financial Management FIN31IFM Corporate Finance FIN31CFI Financial Risk Management FIN32FRM Investment & Portfolio Management FIN32IPM	15 credit points 15 credit points 15 credit points 15 credit points
	(b) Economics major <u>First semester</u> : any two ECO31 subjects <u>Second semester</u> : 2 of - Applied Economics ECO32AEC - Microeconomic Analysis ECO32MIA - Macroeconomic Analysis ECO32MAA	2 x 15 credit points 2 x 15 credit points
		Total: 60 credit points

Maths/Stats major

1st year	Statistical Science STA11SS Calculus and Linear Algebra MAT12CLA Discrete Mathematics MAT11DM or MAT12DM	15 credit points 15 credit points 15 credit points
		Total: 45 credit points
2nd year	Probability Models & Applications STA22PM (STA22MDA in 2005) Analyses Based on Linear Models STA22LM Linear Algebra MAT21LA Second-year mathematics or statistics subjects	10 credit points 10 credit points 10 credit points 10 credit points minimum
		Total: 40 credit points minimum
3rd year	Third-year mathematics or third-year statistics subjects	
		Total: 60 credit points minimum

Recommended electives at 1st, 2nd and 3rd year

The above combinations of units leave 30 credit points of electives at first year and 35 credit points of electives at second year that can be chosen from any discipline at the university and 60 credit points of electives to be chosen from mathematics and/or statistics units at third year. The following units are highly recommended.

1st year

Introduction to Object-Oriented Programming using Java CSE11OOJ	15 credit points
Intermediate Object-Oriented Programming using Java CSE12IJA	15 credit points

2nd year

Probability Models and Applications STA31PM	10 credit points
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3rd year

Numerical Analysis MAT31NA	15 credit points
Linear Programming MAT32ALP	10 credit points
Analysis Based on Linear Models STA32LM	15 credit points

Honours Year

By choosing third-year units carefully, a student doing this stream will be able to qualify for honours in Mathematics, Statistics, Finance or Economics. With the approval of the course advisor it is also possible to do some Finance or Economics units within the honours year of the Maths/Stats degree.

Accreditation

Students successfully completing a course including the Finance and Economics units and Mathematics and Statistics units listed on the previous page are able to obtain accreditation as Associate Members of the Australian Institute of Banking and Finance.