## Bachelor of Mathematics
### DOUBLE MAJOR PATHWAY

**Commencing in Semester 2 2018-2019**  
**Studying at Callaghan**

This Program Plan is an enrolment guide to ensure you are on track to graduate. If at any time you wish to vary from this program plan seek prior advice from your Program Advisor to ensure you remain on track.

### Program Plan Key:
- **= Core**  
- **= Major 1**  
- **= Major 2**  
- **= Alternate Pathway**  
- **= Standard Pathway**  
- **= Directed**  
- **= Elective**

### Year 1
- **Semester 1**
  - MATH1210 Mathematical Discovery 1 or MATH1110 Mathematics for Engineering, Science and Technology 1
  - PROGRAMMING DIRECTED COURSE 1000 LEVEL
  - MAJOR
  - ELECTIVE

### Year 2
- **Semester 2**
  - MATH1800 Mathematical Modelling
  - ELECTIVE
  - ELECTIVE

### Year 3
- **Semester 2**
  - MATH2320 Linear Algebra
  - STAT2010 Fundamentals of Statistics
  - MATH1220 Mathematical Discovery 2 or MATH1120 Mathematics for Engineering, Science and Technology 2

### Year 4
- **Semester 2**
  - MAJOR 1 3000 level
  - MAJOR 1 3000 level
  - MAJOR 2 3000 level
  - MAJOR 2 3000 level

Information correct as of May 2019 and subject to change.

Program Code: 10237  
CRICOS Code: 001608D  
CRICOS Provider: 00109J
To be eligible to graduate make sure you have completed 240 units (10 units = 1 course unless otherwise specified) which meet the following criteria:

- ✔ Core courses - 40 units. 20 units of your Core courses are also counted towards your Major.
- ✔ A 10 unit programming directed course.
- ✔ Standard Pathway - 20 units. Students who have obtained a Band 4 in HSC NSW Extension 1, or have completed NSW HSC Extension 2, or equivalent should complete the Standard Pathway. For further information please see Enrolling in Maths OR
- ✔ Alternate pathway - 30 units. Students who have obtained a Band 5 in NSW HSC Mathematics, or have completed NSW HSC Extension 1, or equivalent should complete the Alternate Pathway. For further information please see Enrolling in Maths.
- ✔ Major 1 - 80 units with 40 units at 3000 level and including all Core, Compulsory and Directed courses. Each Major must contain at least 60 units of unique courses (that is, courses that do not count towards both Majors).
- ✔ Major 2 - 80 units with 40 units at 3000 level and including all Core, Compulsory and Directed courses.
- ✔ Electives - 50 units (Standard Pathway) or 40 units (Alternate pathway). Visit the Course Handbook to see a list of available Electives.
- ✔ Students must not exceed 100 units at 1000 level, and must take a minimum of 60 units at 3000 level.
- ✔ Students completing the Studies in Mathematics and Statistics (SMS) Major cannot have a Double Major within this program. Students interested in completing a Single Major, or the SMS pathway, please see the Bachelor of Mathematics Single Major Program Plan.
- ✔ The duration of this program is 3 years full time study (40 units per semester) or part time equivalent.
- ✔ The maximum time to complete this program is 8 years.

Some courses have assumed knowledge and/or requisites, please refer to the individual Course Handbook.
The Program Handbook has valuable information on program structure and requirements, if you are intending on studying part time or varying from this program plan please seek prior advice from your Program Advisor.
## Bachelor of Mathematics Directed Courses

Complete **10 units** from the following Directed courses:
- ENGG1003 Introduction to Procedural Programming
- INFT1004 Introduction to Programming
- SENG1110 Object Oriented Programming

## Bachelor of Mathematics Major Sequences

A Major is an area of study that you wish to focus on in your program. A course will count towards your Major if it is listed as a compulsory or directed course under the relevant major in the Program Handbook. In each major you must complete 80 units, including 20 units of core courses.

### Majors Courses (Core and Compulsory Courses listed in ORANGE)
Subject to change - Please refer to the program handbook for up to date information.

<table>
<thead>
<tr>
<th>Major</th>
<th>Core courses that count towards Major</th>
<th>Compulsory Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Mathematics</td>
<td>MATH1800 Mathematical Modelling</td>
<td>MATH2330 Analysis</td>
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<tr>
<td></td>
<td></td>
<td>MATH2800 Differential Equations</td>
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<tr>
<td></td>
<td>MATH2310 Calculus of Science and Engineering</td>
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<td></td>
<td>MATH2320 Linear Algebra</td>
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<tr>
<td></td>
<td>MATH2330 Analysis</td>
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<tr>
<td></td>
<td>MATH2600 Introduction to Modern Mathematical Computation</td>
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<tr>
<td></td>
<td>MATH2800 Differential Equations</td>
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<td>_directional_courses_10_units</td>
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<tr>
<td>Pure Mathematics</td>
<td>MATH3210 Directed Studies in Mathematics</td>
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<tr>
<td></td>
<td>MATH3242 Complex Analysis</td>
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<td></td>
<td>MATH3010</td>
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<tr>
<td></td>
<td>MATH3120 Algebra</td>
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<td></td>
<td>MATH3170 Number Theory</td>
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<tr>
<td></td>
<td>MATH3180 Topology</td>
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<td>MATH3205 Fourier Analysis</td>
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<tr>
<td></td>
<td>MATH3242 Complex Analysis</td>
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<td></td>
<td>MATH3510 Combinatorics and Graph Theory</td>
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<td>MATH3700 Advanced Differential Equations</td>
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<td></td>
<td>MATH3820 Numerical Methods</td>
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<td></td>
<td>MATH3840 Optimisation</td>
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<td></td>
<td>MATH3850 Industrial Project</td>
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<tr>
<td></td>
<td>MATH3840 Optimisation</td>
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<tr>
<td></td>
<td>MATH3850 Industrial Project</td>
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</tbody>
</table>

### Core courses that count towards Major
- MATH2330 Analysis
- MATH2730 Operations Research 1 (MATH2730 no longer offered from 2019)
- MATH2800 Differential Equations

### Compulsory Courses
- MATH3210 Directed Studies in Mathematics
- MATH3242 Complex Analysis
- MATH3010
- MATH3120 Algebra
- MATH3170 Number Theory
- MATH3180 Topology
- MATH3205 Fourier Analysis
- MATH3242 Complex Analysis
- MATH3510 Combinatorics and Graph Theory
- MATH3700 Advanced Differential Equations
- MATH3820 Numerical Methods

### Directed Courses
- Students must complete 10 units of 2000 level Directed Courses
- MATH2600 Introduction to Modern Mathematical Computation
- MATH2800 Differential Equations
- MATH3120 Algebra
- MATH3170 Number Theory
- MATH3180 Topology
- MATH3205 Fourier Analysis
- MATH3242 Complex Analysis
- MATH3510 Combinatorics and Graph Theory
- MATH3700 Advanced Differential Equations
- MATH3820 Numerical Methods
Bachelor of Mathematics Major Sequences cont...

A Major is an area of study that you wish to focus on in your program. A course will count towards your Major if it is listed as a compulsory or directed course under the relevant major in the Program Handbook. In each major you must complete 80 units, including 20 units of core courses.

### Majors

<table>
<thead>
<tr>
<th>Statistics Major</th>
<th>Core courses that count towards Major</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>MATH1800 Mathematical Modelling</td>
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<tr>
<td></td>
<td>STAT2010 Fundamentals of Statistics</td>
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</tbody>
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**Compulsory Courses**

- STAT2000 Applied Statistics and Research Methods
- STAT2020 Predictive Analytics
- STAT3010 Statistical Inference

**Directed Courses**

- Students must complete 30 units of Directed Courses.
  - STAT3030 Generalised Linear Models
  - STAT3040 Time Series Analysis
  - STAT3100 Systems Thinking for an Integrated Workforce
  - STAT3120 Applied Bayesian Methods
  - STAT3170 Surveys and Experiments

### Courses (Core and Compulsory Courses listed in ORANGE)

- Studies In Mathematics And Statistics Major (SMS)

### Core courses that count towards Major

- MATH2310 Calculus of Science and Engineering
- MATH2320 Linear Algebra

### Directed Courses

- Students must complete 20 units of 2000 level Directed Courses, including at least one of MATH2330, MATH2730 or STAT2000.
  - MATH2330 Analysis
  - MATH2600 Introduction to Modern Mathematical Computation
  - MATH2800 Differential Equations
  - STAT2000 Applied Statistics and Research Methods
  - STAT2020 Predictive Analytics

- Students must complete 40 units of 3000 level Directed Courses, including at least one of MATH3120, MATH3170, MATH3840 and MATH3850.
  - MATH3120 Algebra
  - MATH3170 Number Theory
  - MATH3180 Topology
  - MATH3205 Fourier Analysis
  - MATH3210 Directed Studies in Mathematics
  - MATH3242 Complex Analysis
  - MATH3400 Research Topics in Mathematics
  - MATH3510 Combinatorics and Graph Theory
  - MATH3700 Advanced Differential Equations
  - MATH3800 Optimisation
  - MATH3820 Numerical Methods
  - MATH3840 Optimisation in Business and Industry
  - MATH3850 Industrial Project
  - STAT3010 Statistical Inference
  - STAT3030 Generalised Linear Models
  - STAT3040 Time Series Analysis
  - STAT3100 Systems Thinking for an Integrated Workforce
  - STAT3120 Applied Bayesian Methods
  - STAT3170 Surveys and Experiments
  - STAT3990 Topics in Statistics
## Helpful Hints & Tips

### Enrolment Help
- Need help? [Ask UON](#)
- How do I use the Web Timetable? [](#)

### Info for New Students
- First year undergraduate students usually only enrol in 1000 level courses [](#)
- New Postgraduate students should only enrol in 6000 level courses [](#)
- Find out all you need to know about getting started at uni [](#)

### Understanding Courses & Programs
- Not sure what courses to study? [](#)
- Understanding program and course jargon [](#)
- Understanding UON Jargon [](#)

### Prior Study
- Check you have met the assumed knowledge and requisites for courses before enrolling [](#)
- Have you studied elsewhere or transferred programs? Don’t forget to apply for credit [](#)

### Considering a Break?
- Need to take a break? This is called a ‘leave of absence’. Check if you are eligible [](#)
- Planning on going overseas? Keep electives free, so it’s easier for you to receive credit for your overseas studies [](#)

### More Questions?
- We are here to answer questions about your program. Talk to us your way!
- Ask UON [](#)
- 1300 ASK UON [](#)
- Visit Student Central [](#)
- Message us on Facebook [](#)
- or Twitter [](#)
- UONline via myUON [](#)