

# PROGRAM PLAN

## BACHELOR OF MATHEMATICS / BACHELOR OF SCIENCE

**PROGRAM OPTION:**  
120 Unit Physics Major

**START DATE:**  
Semester 1, 2019 & Semester 1,  
2020

**LOCATION:**  
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 advice from your Academic Program Advisor to ensure you remain on track.

 **PROGRAM HANDBOOK**

 **COURSE HANDBOOK**

**NAME:**

**STUDENT NO.:**

### COURSE STATUS KEY

**C** = Completed

**En** = Enrolled

**NS** = Not Started

YEAR 1	<b>SEMESTER 1</b> <b>MATH1110*</b> Mathematics for Engineering, Science and Technology 1 <i>(MATH1210 no longer offered)</i> PHYSICS MAJOR	<b>B MATH PROGRAMMING DIRECTED COURSE</b> DIRECTED	<b>SCIE1001</b> Professional Scientific Thinking CORE	<b>SCIE1002</b> Multidisciplinary Laboratories CORE	<b>SEMESTER 2</b> <b>MATH1800</b> Mathematical Modelling CORE	<b>STAT1300</b> Fundamentals of Statistics <i>(replaces STAT2010 Fundamentals of Statistics)</i> CORE	<b>MATH1120*</b> Mathematics for Engineering, Science and Technology 2 <i>(MATH1220 no longer offered)</i> PHYSICS MAJOR	<b>ELECTIVE</b> 1000/2000/3000 Level ELECTIVE
	<b>SEMESTER 1</b> <b>MATH2310</b> Calculus of Science and Engineering PHYSICS MAJOR	<b>SCIE2001</b> Professional Employment Skills CORE	<b>PHYS1210</b> Advanced Physics I PHYSICS MAJOR	<b>MATH2340*</b> Linearity and Continuity 1 <i>(if you have completed both MATH1210 and MATH1220 you will complete an elective instead of MATH2340)</i> CORE		<b>SEMESTER 2</b> <b>MATH2350</b> Linearity and Continuity 2 <i>(replaces MATH2320 Linear Algebra)</i> CORE	<b>SCIE2002</b> Interdisciplinary Challenges CORE	<b>PHYS1220</b> Advanced Physics II PHYSICS MAJOR
YEAR 3	<b>SEMESTER 1</b> <b>MATH MAJOR</b> 2000 level MAJOR	<b>PHYS2111</b> Classical Physics 1 PHYSICS MAJOR	<b>SCIE3001A</b> Transdisciplinary Capstone: Planning and Implementing CORE	<b>PHYS2211</b> Modern Physics 1 PHYSICS MAJOR	<b>SEMESTER 2</b> <b>PHYS2112</b> Classical Physics 2 PHYSICS MAJOR	<b>MATH MAJOR</b> 2000 level MATH MAJOR	<b>SCIE3001B</b> Transdisciplinary Capstone: Implementing and Communicating CORE	<b>ELECTIVE</b> 2000/3000 Level ELECTIVE
	<b>SEMESTER 1</b> <b>MATH MAJOR</b> 3000 level MATH MAJOR	<b>MATH MAJOR</b> 3000 level MATH MAJOR	<b>PHYS3112</b> Photonics PHYSICS MAJOR	<b>PHYS3111</b> Biophysics PHYSICS MAJOR	<b>SEMESTER 2</b> <b>MATH MAJOR</b> 3000 level MATH MAJOR	<b>MATH MAJOR</b> 3000 level MATH MAJOR	<b>PHYS3211</b> Quantum Information Science PHYSICS MAJOR	<b>PHYSICS MAJOR DIRECTED</b> MATH2242 or MATH3820 (MATH2242 replaces MATH3242) PHYSICS MAJOR

\* The Standard and Alternate Pathways have now been removed from the program. If you have completed both MATH1210 and MATH1220 you will complete an elective instead of MATH2340. Please refer to the transition documents for further information.

++ Students must complete either MATH2242 (replaced MATH3342) or MATH3820 to count towards their Physics Major.

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To be eligible to graduate make sure you have completed 320 units (10 units = 1 course unless otherwise specified) which meet the following criteria:

- Core courses – 100 units.
- Bachelor of Mathematics programming directed course – 10 units.
- Mathematics Major – 80 units, with a minimum of 40 units at 3000 level (20 units of core will count toward the Mathematics Major).
- Science Major – 120 units (see Pathway B for Major sequences for individual requirements).
- Electives\* – 30 units
- The duration of this program is 4 year full-time (40 units per semester) or part-time equivalent.
- The maximum time to complete this program is 10 years.

*\* The Standard and Alternate Pathways have now been removed from the program. If you have completed both MATH1210 and MATH1220 you will complete an elective instead of MATH2340, you will complete a total of 60 units of core courses and 50 units of electives. Please refer to the transition documents for further information.*



Some courses have assumed knowledge and/or requisites, please refer to the individual [Course Handbook](#). Please refer to the [Program Handbook](#) for specific information on program structure. If you are intending varying from this program plan please seek advice from your [Academic Program Advisor](#).

# PROGRAM PLAN

## BACHELOR OF MATHEMATICS / BACHELOR OF SCIENCE

### SCIENCE MAJOR

#### PHYSICS MAJOR

##### COMPULSORY COURSES

Complete the following compulsory courses:

**MATH1110: Mathematics for Engineering, Science and Technology 1**  
**MATH1210: Mathematical Discovery 1**  
**PHYS1210: Advanced Physics I**  
**PHYS1220: Advanced Physics II**  
**MATH2310: Calculus of Science and Engineering**  
**PHYS2111: Classical Physics 1**  
**PHYS2112: Classical Physics 2**  
**PHYS2211: Modern Physics 1**  
**PHYS3111: Biophysics**  
**PHYS3112: Photonics**  
**PHYS3211: Quantum Information Science**

##### DIRECTED COURSES

Complete 10 units from:

**MATH2242: Complex Analysis**  
**MATH3820: Numerical Methods**

#### DIRECTED MATH PROGRAMMING COURSE

##### DIRECTED COURSES

Complete 10 units from:

**ENGG1003: Introduction to Procedural Programming**  
**INFT1004: Introduction to Programming**  
**SENG1110: Object Oriented Programming**

### MATHEMATICS MAJOR

#### APPLIED MATHEMATICS MAJOR

##### DIRECTED COURSES – 2000 LEVEL

Complete 20 units from:

**MATH2242: Complex Analysis** (*replaces MATH3242, you cannot enrol if you have completed MATH3242*)  
**MATH2330: Analysis** (*no longer offered*)  
**MATH2350: Linearity and continuity 2** (*if you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350*)  
**MATH2800: Ordinary Differential Equations**

##### DIRECTED COURSES – 3000 LEVEL

Complete 40 units from:

**MATH3120: Algebra**  
**MATH3170: Number Theory**  
**MATH3205: Fourier Analysis**  
**MATH3210: Directed Studies in Mathematics** (*no longer offered*)  
**MATH3242: Complex Analysis** (*replaced by MATH2242, cannot enrol in both*)  
**MATH3700: Partial Differential Equations**  
**MATH3800: Optimisation** (*no longer offered*)  
**MATH3820: Numerical Methods**  
**MATH3840: Optimisation in Business and Industry** (*no longer offered*)  
**MATH3850: Industrial Project** (*no longer offered*)  
**STAT3030: Generalised Linear Models**  
**STAT3040: Time Series Analysis**  
**STAT3100: Systems Thinking for an Integrated Workforce**  
**STAT3120: Applied Bayesian Methods** (*no longer offered*)  
**STAT3170: Surveys and Experiments** (*no longer offered*)  
**STAT3800: Deterministic and Stochastic Optimisation**

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## BACHELOR OF MATHEMATICS / BACHELOR OF SCIENCE

### MATHEMATICS MAJOR

#### PURE MATHEMATICS MAJOR

##### DIRECTED COURSES – 2000 LEVEL

Complete 20 units from:

**MATH2242: Complex Analysis** (*replaces MATH3242, you cannot enrol if you have completed MATH3242*)

**MATH2330: Analysis** (*no longer offered*)

**MATH2350: Linearity and continuity 2** (*if you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350*)

**MATH2600: Introduction to Modern Mathematical Computation** (*course no longer offered*)

**MATH2800: Ordinary Differential Equations**

##### DIRECTED COURSES – 3000 LEVEL

Complete 40 units from:

**MATH3010: Logic and Set Theory** (*no longer offered*)

**MATH3120: Algebra**

**MATH3170: Number Theory**

**MATH3180: Topology** (*no longer offered*)

**MATH3205: Fourier Analysis**

**MATH3210: Directed Studies in Mathematics** (*no longer offered*)

**MATH3242: Complex Analysis** (*replaced by MATH2242, cannot enrol in both*)

**MATH3510: Combinatorics and Graph Theory** (*no longer offered*)

**MATH3700: Partial Differential Equations**

**MATH3820: Numerical Methods**

**STAT3030: Generalised Linear Models**

**STAT3040: Time Series Analysis**

**STAT3100: Systems Thinking for an Integrated Workforce**

**STAT3120: Applied Bayesian Methods** (*no longer offered*)

**STAT3170: Surveys and Experiments** (*no longer offered*)

**STAT3800: Deterministic and Stochastic Optimisation**

#### STUDIES IN MATHEMATICS AND STATISTICS MAJOR

##### DIRECTED COURSES

Complete 20 units, including at least one of MATH2330 or MATH2350 or STAT2000 from:

**MATH2330: Analysis** (*no longer offered*)

**MATH2350: Linearity and continuity 2** (*if you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350*)

**MATH2600: Introduction to Modern Mathematical Computation** (*no longer offered*)

**MATH2800: Ordinary Differential Equations**

**STAT2000: Applied Statistics and Research Methods**

**STAT2020: Predictive Analytics**

##### DIRECTED COURSES

Complete 40 units from:

**MATH3120: Algebra**

**MATH3170: Number Theory**

**MATH3180: Topology** (*no longer offered*)

**MATH3205: Fourier Analysis**

**MATH3210: Directed Studies in Mathematics** (*no longer offered*)

**MATH3242: Complex Analysis** (*no longer offered*)

**MATH3400: Research Topics in Mathematics** (*no longer offered*)

**MATH3510: Combinatorics and Graph Theory** (*no longer offered*)

**MATH3700: Partial Differential Equations**

**MATH3800: Optimisation** (*no longer offered*)

**MATH3820: Numerical Methods**

**MATH3840: Optimisation in Business and Industry** (*no longer offered*)

**MATH3850: Industrial Project** (*no longer offered*)

**STAT3010: Statistical Inference** (*no longer offered*)

**STAT3030: Generalised Linear Models**

**STAT3040: Time Series Analysis**

**STAT3100: Systems Thinking for an Integrated Workforce**

**STAT3120: Applied Bayesian Methods** (*no longer offered*)

**STAT3170: Surveys and Experiments** (*no longer offered*)

**STAT3800: Deterministic and Stochastic Optimisation**

**STAT3990: Topics in Statistics** (*no longer offered*)

#### STATISTICS MAJOR

##### COMPULSORY COURSES

Complete the following compulsory courses:

**STAT2000: Applied Statistics and Research Methods**

**STAT2020: Predictive Analytics**

**STAT3010: Statistical Inference** (*no longer offered – if you have not completed STAT3010, you need to complete STAT2300*)

##### DIRECTED COURSES

Complete 30 units from:

**STAT3030: Generalised Linear Models**

**STAT3040: Time Series Analysis**

**STAT3100: Systems Thinking for an Integrated Workforce**

**STAT3120: Applied Bayesian Methods** (*no longer offered*)

**STAT3170: Surveys and Experiments** (*no longer offered*)

**STAT3800: Deterministic and Stochastic Optimisation**