

PROGRAM PLAN



BACHELOR OF MATHEMATICS / BACHELOR OF SCIENCE

PROGRAM OPTION:
Pathway B – 120 Unit Science
Major - Physics

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 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	SEMESTER 1	<p>MATH1210 Mathematical Discovery 1</p> <p>--- OR ---</p> <p>MATH1110 Mathematics for Engineering, Science and Technology 1</p> <p>B MATH DIRECTED</p>	<p>B MATH PROGRAMMING DIRECTED COURSE</p> <p>DIRECTED</p>	<p>SCIE1001 Professional Scientific Thinking</p> <p>CORE</p>	<p>SCIE1002 Multidisciplinary Laboratories</p> <p>CORE</p>	SEMESTER 2	<p>MATH1800 Mathematical Modelling</p> <p>CORE</p>	<p>STAT2010 Fundamentals of Statistics</p> <p>CORE</p>	<p>MATH1220 Mathematical Discovery 2</p> <p>--- OR ---</p> <p>MATH1120 Mathematics for Engineering, Science and Technology 2</p> <p>B MATH DIRECTED</p>	<p>ELECTIVE* 1000/2000/3000 Level</p> <p>ELECTIVE</p>
	SEMESTER 2	<p>MATH2310 Calculus of Science and Engineering</p> <p>CORE</p>	<p>SCIE2001 Professional Employment Skills</p> <p>CORE</p>	<p>PHYS1210 Advanced Physics I</p> <p>MAJOR</p>	<p>ELECTIVE* 1000/2000/3000 Level</p> <p>ELECTIVE</p> <p>--- OR ---</p> <p>MATH2340 Linearity and Continuity</p> <p>B MATH DIRECTED</p>	SEMESTER 2	<p>MATH2320 Linear Algebra</p> <p>CORE</p>	<p>SCIE2002 Interdisciplinary Challenges</p> <p>CORE</p>	<p>PHYS1220 Advanced Physics II</p> <p>MAJOR</p>	<p>ELECTIVE* 1000/2000/3000 Level</p> <p>ELECTIVE</p>
YEAR 2	SEMESTER 1	<p>MATH MAJOR 2000 level</p> <p>MAJOR</p>	<p>PHYS2111 Classical Physics 1</p> <p>MAJOR</p>	<p>SCIE3001A Transdisciplinary Capstone: Planning and Implementing</p> <p>CORE</p>	<p>PHYS2211 Modern Physics 1</p> <p>MAJOR</p>	SEMESTER 2	<p>PHYS2112 Classical Physics 2</p> <p>MAJOR</p>	<p>MATH MAJOR 2000 level</p> <p>MAJOR</p>	<p>SCIE3001B Transdisciplinary Capstone: Implementing and Communicating</p> <p>CORE</p>	<p>ELECTIVE* 2000/3000 Level</p> <p>ELECTIVE</p>
	SEMESTER 2	<p>MATH MAJOR 3000 level</p> <p>MAJOR</p>	<p>MATH MAJOR 3000 level</p> <p>MAJOR</p>	<p>PHYS3112 Photonics</p> <p>MAJOR</p>	<p>PHYS3111 Biophysics</p> <p>MAJOR</p>	SEMESTER 2	<p>MATH MAJOR 3000 level</p> <p>MAJOR</p>	<p>MATH MAJOR 3000 level</p> <p>MAJOR</p>	<p>PHYS3211 Quantum Information Science</p> <p>MAJOR</p>	<p>SCIENCE MAJOR MATH3242 or MATH3820</p> <p>MAJOR</p>

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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.
- 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](#).
- Science Major – 120 units (see Pathway B for Major sequences for individual requirements).
- Electives - 10 units for Standard pathway students or zero units for Alternate Pathway students. Electives can be chosen from Science Elective Pathways or any unrestricted courses offered within the university. Refer to the Science Elective Pathway Documents located on the [Program Handbook](#) or visit the [Course Handbook](#) to see a list of available Electives.
- 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.



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 [Program Advisor](#).

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APPLIED MATHEMATICS MAJOR

COMPULSORY COURSES

Complete the following compulsory courses:

MATH2330: Analysis
MATH2800: Ordinary Differential Equations

DIRECTED COURSES

Complete 40 units from:

MATH3210: Directed Studies in Mathematics
MATH3242: Complex Analysis
MATH3700: Partial Differential Equations
MATH3800: Optimisation
MATH3820: Numerical Methods
MATH3840: Optimisation in Business and Industry
MATH3850: Industrial Project

PURE MATHEMATICS MAJOR

COMPULSORY COURSES

Complete the following compulsory course:

MATH2330: Analysis

DIRECTED COURSES – 2000 LEVEL

Complete 10 units from:

MATH2600: Introduction to Modern Mathematical Computation
MATH2800: Ordinary Differential Equations

DIRECTED COURSES – 3000 LEVEL

Complete 40 units from:

MATH3010: Logic and Set Theory
MATH3120: Algebra
MATH3170: Number Theory
MATH3180: Topology
MATH3205: Fourier Analysis
MATH3210: Directed Studies in Mathematics
MATH3242: Complex Analysis
MATH3510: Combinatorics and Graph Theory
MATH3700: Partial Differential Equations
MATH3820: Numerical Methods

STATISTICS MAJOR

COMPULSORY COURSES

Complete the following compulsory courses:

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

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
STAT3170: Surveys and Experiments

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STUDIES IN MATHEMATICS AND STATISTICS MAJOR

COMPULSORY COURSES

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

MATH2330: Analysis
MATH2600: Introduction to Modern Mathematical Computation
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
MATH3205: Fourier Analysis
MATH3210: Directed Studies in Mathematics
MATH3242: Complex Analysis
MATH3400: Research Topics in Mathematics
MATH3510: Combinatorics and Graph Theory
MATH3700: Partial 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

SCIENCE MAJOR - PHYSICS

COMPULSORY COURSES

Complete the following compulsory courses:

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

Students without sufficient mathematical background must complete MATH1002 prior to MATH1110

DIRECTED COURSES – LIST A

Complete 10 units from:

MATH1110: Mathematics for Engineering, Science and Technology 1
MATH1210: Mathematical Discovery 1

DIRECTED COURSES – LIST B

Complete 10 units from:

MATH1120: Mathematics for Engineering, Science and Technology 2
MATH1220: Mathematical Discovery 2

DIRECTED COURSES – LIST C

Complete 10 units from:

MATH3242: Complex Analysis
MATH3820: Numerical Methods