

PROGRAM PLAN

BACHELOR OF MATHEMATICS/BACHELOR OF SCIENCE

PROGRAM OPTION:
Bsc - Pathway B – **PHYSICS** Major
BMath – **ALTERNATE** Pathway

START DATE:
Semester 2, 2019-2020

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					SEMESTER 2	B MATH PROGRAMMING DIRECTED COURSE DIRECTED	PHYS1210 Advanced Physics I MAJOR	MATH1110 Mathematics for Engineering, Science and Technology 1 MAJOR	ELECTIVE** 1000/2000/3000 Level ELECTIVE
	SEMESTER 1	MATH1120 Mathematics for Engineering, Science and Technology 2 MAJOR	SCIE1001 Professional Scientific Thinking CORE	SCIE1002 Multidisciplinary Laboratories CORE	ELECTIVE** 1000/2000/3000 Level ELECTIVE	SEMESTER 2	MATH2310 Calculus of Science and Engineering CORE	MATH1800 Mathematical Modelling CORE	STAT2010 Fundamentals of Statistics CORE	PHYS1220 Advanced Physics II MAJOR
YEAR 3	SEMESTER 1	PHYS2111 Classical Physics 1 MAJOR	SCIE2001 Professional Employment Skills CORE	MATH2340 Linearity and Continuity CORE	PHYS2211 Modern Physics 1 MAJOR	SEMESTER 2	MATH2320 Linear Algebra CORE	SCIE2002 Interdisciplinary Challenges CORE	MATH MAJOR 2000 level MAJOR	PHYS2112 Classical Physics 2 MAJOR
	SEMESTER 1	SCIE3001A Transdisciplinary Capstone: Planning and Implementing CORE	MATH MAJOR 2000 level MAJOR	PHYS3111 Biophysics MAJOR	PHYS3112 Photonics MAJOR	SEMESTER 2	SCIE3001B Transdisciplinary Capstone: Implementing and Communicating CORE	MATH MAJOR 3000 level MAJOR	PHYS3211 Quantum Information Science MAJOR	MATH3242++ Complex Analysis MAJOR --- OR --- ELECTIVE** 1000/2000/3000 Level ELECTIVE
YEAR 5	SEMESTER 1	MATH MAJOR 3000 level MAJOR	MATH MAJOR 3000 level MAJOR	MATH MAJOR 3000 level MAJOR	ELECTIVE** 1000/2000/3000 Level ELECTIVE --- OR --- MATH3820++ Numerical Methods MAJOR	SEMESTER 2				

++Students choose either MATH3242 or MATH3820 as part of the Physics Major.

**Elective Options include: Science Elective Pathways or any unrestricted courses offered within the university

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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.
- A 10 unit Bachelor of Mathematics programming directed course.
- Mathematics Major – 80 units, with a minimum of 40 units at 3000 level. 20 units of 1000 level Math Directed will count toward the Mathematics Major.
- Alternate Pathway – includes MATH1110, MATH1120 and MATH2340.
- Physics Major – 120 units (20 units of 1000 level Math Directed will count toward the Physics Major, and MATH2310)
- Electives - 30 units. 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.
- Students must not exceed 120 units at 1000 level in this program.
- 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 t

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B SCIENCE MAJOR

PHYSICS MAJOR

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

DIRECTED MATH PROGRAMMING COURSE

DIRECTED COURSES

Complete 10 units from:

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

B MATHEMATICS MAJOR

APPLIED MATHEMATICS MAJOR

COMPULSORY COURSES

Complete the following compulsory courses:

MATH2330: Analysis
MATH2800: Ordinary Differential Equations

DIRECTED COURSES – 3000 LEVEL

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

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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

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: Forecasting with Linear Time Series Models
STAT3100: Systems Thinking for an Integrated Workforce
STAT3120: Applied Bayesian Methods
STAT3170: Surveys and Experiments
STAT3990: Topics in Statistics