Bachelor of Mathematics (Advanced)

TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Changes have been made to the Bachelor of Mathematics (Advanced) program from 2021 onwards. Information including the changes to the overall structure of the program, transition arrangements, and changes for each major, can be found in the following pages. Frequently Asked Questions can be found on pages 8 and 9.

From 2021, the **Program Structure** has changed as follows:

Pre-2021 Bachelor of Mathematics (Advanced) Program Structure		2021 Bachelor of Mathematics (Advanced) Program Structure		Details of Change
Core Courses • MATH1003 • MATH1800 • MATH2310 • MATH2320 • STAT2010 • SCIE3003A • SCIE3003B	70 units	**Core Courses** • MATH1110 • MATH1120 • MATH1800 • SCIE1003 • STAT1100 • STAT1300 • MATH2310 • MATH2340 • MATH2350 • SCIE2300 • STAT2020 • SCIE3003A • SCIE3003B	130 units	Removal of • MATH1003 • MATH2320 • STAT2010 Addition of • MATH1110 • MATH1120 • SCIE1003 • STAT1100 • STAT1300 • MATH2340 • MATH2350 • SCIE2003 • STAT2020
Directed Programming Course	10 units	**Directed Programming Course**	10 units	Remains unchanged
Alternate Pathway • MATH1110 • MATH1120 • MATH2340 **Standard Pathway** • MATH1210 • MATH1220 • 10 units of electives	30 units	-	-	Alternate and Standard Pathways removed from the program. MATH1110, MATH1120, and MATH2340 have become Core Courses for students who commence in 2021. MATH1210 and MATH1220 are no longer offered (discontinued).
Advanced Course Pathway	20 units	-	-	SCIE2003 becomes a Core Course.
Electives	50 units	**Electives**	40 units	Electives reduced to 40 units
Majors • Applied Mathematics • Pure Mathematics • Statistics • Studies in Mathematics and Statistics	60 units (20 units of Core Courses are also counted towards each major)	**Majors** • Pure and Applied Mathematics • Statistics • Studies in Mathematics and Statistics	60 units (20 units of Core Courses are also counted towards each major)	The Pure and Applied Mathematics major will replace the Pure Mathematics major and the Applied Mathematics major. The Statistics major and the Studies in Mathematics and Statistics majors have been revised.
Total 240 units		**Total 240 units**		The total units are unchanged.

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Bachelor of Mathematics (Advanced) Structure Pre-2021			Bachelor of Mathematics (Advanced) Structure 2021		
Core Courses – 70 units			**Core Courses – 130 units**		
			#MATH1110	Mathematics for Engineering, Science and Technology 1	10 units
			#MATH1120	Mathematics for Engineering, Science and Technology 2	10 units
~MATH1003	Advanced Mathematical Thinking	10 units			
MATH1800	Mathematical Modelling	10 units	MATH1800	Mathematical Modelling	10 units
			#SCIE1003	Advanced Scientific Thinking	10 units
			#STAT1100	Data Wrangling and Visualisation	10 units
			#STAT1300	Fundamentals of Statistics	10 units
MATH2310	Calculus of Science and Engineering	10 units	MATH2310	Calculus of Science and Engineering	10 units
~MATH2320	Linear Algebra	10 units			
			#MATH2340	Linearity and Continuity 1	10 units
			#MATH2350	Linearity and Continuity 2	10 units
~STAT2010	Fundamentals of Statistics	10 units			
			#SCIE2003	Advanced Interdisciplinary Challenges	10 units
			#STAT2020	Statistical Inference	10 units
SCIE3003A	Advanced Transdisciplinary Capstone: Planning and Implementing	10 units	SCIE3003A	Advanced Transdisciplinary Capstone: Planning and Implementing	10 units
SCIE3003B	Advanced Transdisciplinary Capstone: Implementing and Communicating	10 units	SCIE3003B	Advanced Transdisciplinary Capstone: Implementing and Communicating	10 units
Directed Programming Course – choose 10 units			**Directed Programming Course – choose 10 units**		
ENGG1003	Introduction to Procedural Programming	10 units	ENGG1003	Introduction to Procedural Programming	10 units
INFT1004	Introduction to Programming	10 units	INFT1004	Introduction to Programming	10 units
SENG1110	Object Oriented Programming	10 units	SENG1110	Object Oriented Programming	10 units
Major – 60 units (20 units of Core Courses are also counted towards each major)			**Major – 60 units (20 units of Core Courses are also counted towards each major)**		
Electives – 50 units			**Electives – 40 units**		
Mathematics Pathway – choose either Standard or Alternate – 30 units					
#Alternate Pathway					
#MATH1110	Mathematics for Engineering, Science and Technology 1	10 units			
#MATH1120	Mathematics for Engineering, Science and Technology 2	10 units			
#MATH2340	Linearity and Continuity	10 units			
~Standard Pathway					
~MATH1210	Mathematical Discovery 1	10 units			
~MATH1220	Mathematical Discovery 2	10 units			
Elective		10 units			
Advanced Course Pathway – choose either Standard or Transition – 20 units					
~Standard Pathway					
#SCIE2003	Advanced Interdisciplinary Challenges	10 units			
~Elective		10 units			
~Transition Pathway					
~SCIE2002	Interdisciplinary Challenges	10 units			
~SCIE2004	Advanced Case Studies	10 units			
TOTAL UNITS 240 units			**TOTAL UNITS 240 units**		
Key	~ Removed from program			# Changed to a core course	

Information correct as of December 2020 and subject to change.

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Transition Arrangements

Course discontinued (no longer offered)	Students who have not completed the discontinued course must complete
MATH1003 Advanced Mathematical Thinking *Core Course*	SCIE1003 Advanced Scientific Thinking
MATH2320 Linear Algebra *Core Course*	MATH2350 Linearity and Continuity 2
STAT2010 Fundamentals of Statistics *Core Course*	STAT1300 Fundamentals of Statistics *This will count towards your program as a 2000 level course.*
SCIE2002 Interdisciplinary Challenges *Compulsory Course for the Transition Pathway*	SCIE2003 Advanced Interdisciplinary Challenges
SCIE2004 Advanced Case Studies *Compulsory Course for the Transition Pathway*	10 unit elective *Please note that the maximum number of 1000 level courses allowed in your program is 100 units.*
STAT3010 Statistical Inference *Compulsory Course for Statistics Major* *Directed Course for Studies in Mathematics and Statistics Major*	**Statistics Major** STAT2300 Statistical Inference *This will count towards your program as a 3000 level course.* **Studies in Mathematics and Statistics** If you have not completed STAT3010 you can choose to complete STAT2300 as one of your 3000 level major Directed Courses however you need to ensure that you complete at least 40 units at 3000 level in your program.
MATH1210 Mathematical Discovery 1 *Compulsory Course for Standard Pathway*	MATH1110 Mathematics for Engineering, Science and Technology 1
MATH1220 Mathematical Discovery 2 *Compulsory Course for Standard Pathway*	MATH1120 Mathematics for Engineering, Science and Technology 2
MATH2330 Real Analysis *Compulsory Course for Applied Mathematics Major and Pure Mathematics Major* *Directed Course for Studies in Mathematics and Statistics Major*	**Applied Mathematics Major** Refer to the transition arrangements table for your major on page 4 **Pure Mathematics Major** Refer to the transition arrangements table for your major on page 5 **Studies in Mathematics and Statistics** Refer to the transition arrangements table for your major on page 7
MATH2600 Introduction to Modern Mathematical Computing *Directed Course for Pure Mathematics Major*	MATH2800 Ordinary Differential Equations *Only applicable for students completing the Pure Mathematics Major.*
For the list of which 3000 level directed courses are being discontinued in each major, please refer to the following pages.	

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Applied Mathematics Major Transition Arrangements		
Core courses that also count towards the major		
MATH1800	Mathematical Modelling	10 units
*STAT2010	Fundamentals of Statistics	10 units
Directed courses – choose 20 units		
~MATH2330	Real Analysis	10 units
^MATH2350	Linearity and Continuity 2	10 units
+MATH2242	Complex Analysis	10 units
MATH2800	Ordinary Differential Equations	10 units
Directed courses – choose 40 units		
#MATH3120	Algebra	10 units
#MATH3170	Number Theory Through Algorithms	10 units
#MATH3205	Fourier Analysis	10 units
~MATH3210	Directed Studies in Mathematics	10 units
~MATH3242	Complex Analysis	10 units
MATH3700	Partial Differential Equations and Modelling	10 units
~MATH3800	Optimisation	10 units
MATH3820	Numerical Methods	10 units
~MATH3840	Optimisation in Business and Industry	10 units
~MATH3850	Industrial Project	10 units
#STAT3030	Generalised Linear Models	10 units
#STAT3040	Forecasting with Linear Time Series Models	10 units
#STAT3100	Systems Thinking for an Integrated Workforce	10 units
~STAT3120	Applied Bayesian Methods	10 units
~STAT3170	Surveys and Experiments	10 units
+STAT3800	Deterministic and Stochastic Optimisation	10 units
Key		
* If you have not completed STAT2010 you need to complete STAT1300.		
^ If you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350.		
+ Course replaces MATH3242, you cannot enrol if you have completed MATH3242.		
~ Course no longer offered, if you have already completed this course it still counts towards your major		
# Existing course added to major.		
+ New course added to major.		

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Pure Mathematics Major Transition Arrangements		
Core courses that also count towards the major		
MATH2310	Calculus of Science and Engineering	10 units
*MATH2320	Linear Algebra	10 units
Directed courses – choose 20 units		
~MATH2330	Real Analysis	10 units
^MATH2350	Linearity and Continuity 2	10 units
+MATH2242	Complex Analysis	10 units
~MATH2600	Introduction to Modern Mathematical Computation	10 units
MATH2800	Ordinary Differential Equations	10 units
Directed courses – choose 40 units		
~MATH3010	Logic and Set Theory	10 units
MATH3120	Algebra	10 units
MATH3170	Number Theory Through Algorithms	10 units
~MATH3180	Topology	10 units
MATH3205	Fourier Analysis	10 units
~MATH3210	Directed Studies in Mathematics	10 units
~MATH3242	Complex Analysis	10 units
~MATH3510	Combinatorics and Graph Theory	10 units
MATH3700	Partial Differential Equations and Modelling	10 units
MATH3820	Numerical Methods	10 units
#STAT3030	Generalised Linear Models	10 units
#STAT3040	Forecasting with Linear Time Series Models	10 units
#STAT3100	Systems Thinking for an Integrated Workforce	10 units
~STAT3120	Applied Bayesian Methods	10 units
~STAT3170	Surveys and Experiments	10 units
+STAT3800	Deterministic and Stochastic Optimisation	10 units
Key		
* If you have not completed MATH2320 you need to complete MATH2350.		
^ If you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350.		
+ Course replaces MATH3242, you cannot enrol if you have completed MATH3242.		
~ Course no longer offered, if you have already completed this course it still counts towards your major.		
# New course added to major.		

Information correct as of December 2020 and subject to change.

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Statistics Major Transition Arrangements		
Core courses that also count towards the major		
MATH1800	Mathematical Modelling	10 units
*STAT2010	Fundamentals of Statistics	10 units
Compulsory courses		
STAT2000	Applied Statistics and Research Methods	10 units
STAT2020	Predictive Analytics	10 units
^STAT3010	Statistical Inference	10 units
Directed courses – choose 30 units		
STAT3030	Generalised Linear Models	10 units
STAT3040	Forecasting with Linear Time Series Models	10 units
STAT3100	Systems Thinking for an Integrated Workforce	10 units
~STAT3120	Applied Bayesian Methods	10 units
~STAT3170	Surveys and Experiments	10 units
#STAT3800	Deterministic and Stochastic Optimisation	10 units
Key		
* If you have not completed STAT2010 you need to complete STAT1300, it will count as a 2000 level course.		
^ If you have not completed STAT3010 you need to complete STAT2300, it will count as a 3000 level course.		
~ Course no longer offered, if you have already completed this course it still counts towards your major.		
# New course added to major.		

Information correct as of December 2020 and subject to change.

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Studies in Mathematics and Statistics Transition Arrangements		
Core courses that also count towards the major		
MATH2310	Calculus of Science and Engineering	10 units
*MATH2320	Linear Algebra	10 units
Directed courses – choose 20 units including 10 units from: MATH2330 or MATH2350 or STAT2000		
~MATH2330	Real Analysis	10 units
^MATH2350	Linearity and Continuity 2	10 units
~MATH2600	Introduction to Modern Mathematical Computation	10 units
MATH2800	Ordinary Differential Equations	10 units
STAT2000	Applied Statistics and Research Methods	10 units
STAT2020	Predictive Analytics	10 units
Directed courses – choose 40 units		
MATH3120	Algebra	10 units
MATH3170	Number Theory Through Algorithms	10 units
~MATH3180	Topology	10 units
MATH3205	Fourier Analysis	10 units
~MATH3210	Directed Studies in Mathematics	10 units
~MATH3242	Complex Analysis	10 units
~MATH3400	Research Topics in Mathematics	10 units
~MATH3510	Combinatorics and Graph Theory	10 units
MATH3700	Partial Differential Equations and Modelling	10 units
~MATH3800	Optimisation	10 units
MATH3820	Numerical Methods	10 units
~MATH3840	Optimisation in Business and Industry	10 units
~MATH3850	Industrial Project	10 units
~STAT3010	Statistical Inference	10 units
STAT3030	Generalised Linear Models	10 units
STAT3040	Forecasting with Linear Time Series Models	10 units
STAT3100	Systems Thinking for an Integrated Workforce	10 units
~STAT3120	Applied Bayesian Methods	10 units
~STAT3170	Surveys and Experiments	10 units
#STAT3800	Deterministic and Stochastic Optimisation	10 units
~STAT3990	Topics in Statistics	10 units
Key		
* If you have not completed MATH2320 you need to complete MATH2350.		
^ If you have completed both MATH2320 and MATH2330 you cannot enrol in MATH2350.		
~ Course no longer offered, if you have already completed this course it still counts towards your major.		
# New course added to major.		

Bachelor of Mathematics (Advanced)

TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

Frequently Asked Questions

Does this change what I need to enrol in?
The courses you need to enrol in may have changed, however you will not be required to complete more than the 240 units required for your program.

Can I still complete my Applied Mathematics major?
Yes, you will still be able to complete your major.

Can I still complete my Pure Mathematics major?
Yes, you will still be able to complete your major.

Can I choose to follow the updated program and enrol in the new courses?
If you have been studying part time, and you have not yet completed the first year of your program, you may be able to transfer to the new 2021 structure. If you are considering transferring to the new 2021 structure you must contact your Academic Program Advisor at programadvice@newcastle.edu.au. If your Academic Program Advisor confirms you are able to transfer to the new program structure you must complete the new structure in its entirety, including the new Core Courses and the new Major courses. If you have completed more than the first year of the program it is unlikely that you will be able to complete the requirements of the new structure within your remaining units and you must follow the pre-2021 program structure and refer to the Transition Arrangements as outlined in this document. You cannot complete more than the 240 units required for the program. You should not refer to the Program Handbook for which courses you need to complete as this will be updated to the 2021 program structure.

Will this delay my graduation?
No. As the changes do not increase the total number of courses you need to complete, these changes will not delay your graduation.

I have completed MATH1210 but not MATH1220, what do I need to enrol in?
You will need to complete MATH1120 instead of MATH1220.

I have completed MATH1220 but not MATH1210, what do I need to enrol in?
You will need to complete MATH1110 instead of MATH1210.

Do I need to complete MATH2340?
Only students completing the Alternate Pathway (MATH1110, MATH1120, and MATH2340) need to complete MATH2340.

I have not completed MATH1003, what do I enrol in instead?
You will need to complete SCIE1003.

I have not completed MATH2320, what do I enrol in instead?
You will need to complete MATH2350.

I have not completed STAT2010, what do I enrol in instead?
You will need to complete STAT1300. STAT1300 will count towards your program as a 2000 level course, not a 1000 level course.

Information correct as of December 2020 and subject to change.

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TRANSITION ARRANGEMENTS - INFORMATION FOR STUDENTS WHO COMMENCED IN THE PROGRAM PRIOR TO 2021

I was previously following the transition pathway and have not completed SCIE2002, what do I enrol in instead?
You will need to complete SCIE2003.

I was previously following the transition pathway and have not completed SCIE2004, what do I enrol in instead?
You will need to complete a 10 unit elective. Please note that the maximum number of 1000 level courses allowed in your program is 100 units.

Do I need to complete STAT1100?
You are not required to complete STAT1100 but if you have room for a 1000 level elective, you can choose STAT1100 if you want to.

Do I need to complete STAT1300?
You only need to complete STAT1300 if you have not already completed STAT2010.

Do I need to complete STAT2020?
You only need to complete STAT2020 if you are completing the Statistics major. Students who commenced in the program before 2021 **do not** need to complete this as a Core Course.

Do I need to complete MATH2350?
You only need to complete MATH2350 if you have not already completed MATH2320.

Can I still complete my double major?
You can still complete your double major but you must ensure that you have 60 units unique to each major and can complete all the requirements of your program within 240 units. Please email programadvice@newcastle.edu.au before each semester to check that the courses you plan to complete will make you eligible for the double major.

Please email ProgramAdvice@newcastle.edu.au if you need enrolment advice.