

Bachelor of Computer Systems Engineering (Honours)/Bachelor of Mathematics

Program Code: 40087

CRICOS Code: 088928B



Transition Arrangements

Last Updated October 2020

The following description outlines the approved transition arrangements for students who commenced in the Bachelor of Computer Systems Engineering (Honours)/Bachelor of Mathematics program in or prior to 2021. Students who commence the program in 2021 onwards must complete the courses and follow the program structure that is outlined in the [Program Handbook](#). If you need further advice, then please contact your Academic Program Advisor on programadvice@newcastle.edu.au.

Course Code and Title (Not yet completed)	New Course Code and Title (Course to be completed from 2021 onwards as offered)
<p>'Completed' means successfully passed a course or received approved credit for a course</p> <p>CORE COURSES</p>	
<p><u>Mathematics Core Option</u></p> <p><u>Option 1</u> MATH1110 Mathematics for Engineering, Science and Technology 1 AND MATH1120 Mathematics for Engineering, Science and Technology 2</p> <p>OR</p> <p><u>Option 2</u> MATH1210 Mathematical Discovery 1 AND MATH1220 Mathematical Discovery 2 AND</p> <p>10 units of electives</p>	<p>MATH1110 Mathematics for Engineering, Science and Technology 1</p> <p>AND</p> <p>MATH1120 Mathematics for Engineering, Science and Technology 2</p> <p>AND</p> <p>MATH2340 Linearity and Continuity 1</p> <p>Please note: <i>After 2021, the option to do MATH1210 and MATH1220 has been removed from the program.</i> From 2021 onwards: 1) if you have not yet completed MATH1210 you must complete MATH1110; and 2) if you haven't completed MATH1220 then you must complete MATH1120. 3) Students who already completed MATH1210 & MATH1220 study one Elective.</p>
COMP2240 Operating Systems	*ELEC2720 Introduction to Embedded Computing.
SENG3400 Network and Distributed Computing	**Select 10 units of Computer Systems Engineering directed courses.
ELEC3850 Electrical Engineering Design and Practice	**Select 10 units of Computer Systems Engineering directed courses.
SENG2050 Web Engineering	If you not completed SENG2050 prior to 2021, then you will complete

	COMP3500 Security Attacks: Analysis and Mitigation Strategies *** (COMP3500 <i>will count in place of</i> SENG2050)
MATH2320 Linear Algebra	MATH2350 Linearity and Continuity 2 Note: <i>If you have previously completed MATH2320 Linear Algebra <u>AND</u> MATH2330 Analysis you cannot take this course. You may instead take an additional mathematics directed course.</i>
One 10-unit Elective	STAT2020 Predictive Analytics # This is not a direct replacement. Please refer to the table below for further information.
One 10-unit Elective	Additional 2000 level Mathematics Directed course # This is not a direct replacement. Please refer to the table below for further information.
One 10-unit 3000 level Mathematics Directed	One 10-unit Elective

***COMP2240 Operating Systems and ELEC2720 Introduction to Embedded Computing**

In 2018, COMP2240 Operating Systems was removed from the program, and ELEC2720 was added, please refer to the table below to see what courses you need to complete in relation to this change.

ELEC3730 Digital and Computer Electronics 2	COMP2240 Operating Systems	Must complete from 2020 onwards
Not yet completed	Not yet completed	ELEC2720 Introduction to Embedded Computing and ELEC3730 Digital and Computer Electronics 2
Not yet completed	Completed	ELEC2720 Introduction to Embedded Computing
Completed (In or prior to 2018)	Not yet completed	COMP2240 Operating Systems OR COMP3350 Advanced Database
Completed	Completed	-

****SENG3400 Network and Distributed Computing and ELEC3850 Electrical Engineering Design and Practice**

In 2019, SENG3400 Network and Distributed Computing was removed from the program and replaced by 10 units of Computer Systems Engineering directed courses. If you have previously completed SENG3400 you do not need to complete 10 units of Computer Systems Engineering directed courses.

In 2020, ELEC3850 Electrical Engineering Design and Practice was removed from the program and replaced by 10 units of Computer Systems Engineering directed courses. If you have previously completed ELEC3850 you do not need to complete 10 units of Computer Systems Engineering directed courses.

Computer Systems Engineering Directed List

Course Code and Title
(Not yet completed)

New Course Code and Title
(Course to be completed from 2021 onwards as offered)

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PHYS3360 Advanced Electromagnetism	If you have not yet done this course, then choose another Directed course from the list.
ELEC4700 Advanced Computer Systems	ELEC4740 Internet of Things
COMP3330 Machine Intelligence	COMP3330 Machine Intelligence
ELEC3400 Signal Processing	ELEC3400 Signal Processing
ELEC4210 Electronics Design	ELEC4210 Electronics Design
ELEC4550 Wireless Communication	If you have not yet done this course, then choose another Directed course from the list.
	COMP3260 Data Security
	COMP3330 Machine Intelligence
	COMP3340 Data Mining
	COMP3600 Security Standards and Practices in Industry
	SENG2200 Programming Languages and Paradigms

*****SENG2050 Web Engineering and COMP3500 Security Attacks: Analysis and Mitigation Strategies**

Strategies

- From 2021 onwards SENG2050 Web Engineering (10 units) was removed from the program and COMP3500 Security Attacks: Analysis and Mitigation Strategies (10 units) was added as a new core course.
- **If you completed SENG2050** prior to 2021 it still counts towards your program. You do not have to complete COMP3500 Security Attacks: Analysis and Mitigation Strategies. Students in this situation who *also* have an available 10-unit Elective course are permitted to choose COMP3500 as one 10-unit Elective course.
- **If you did not complete SENG2050 prior to 2021** then you must complete COMP3500.

#30 units of Elective courses

From 2021 onwards 30 units of Elective courses and the Mathematics pathway options have been removed from the program. One 10-unit Elective has been replaced by STAT2020 Predictive

Analytics, one 10-unit Elective has been replaced by MATH2340 Linearity and Continuity 1 and one 10-unit Elective has been replaced by one additional 10-unit 2000 level Mathematics Directed course.

Option 1 Pathway: MATH1110 Mathematics for Engineering, Science and Technology 1 (10 units), MATH1120 Mathematics for Engineering, Science and Technology 2 (10 units) and MATH2340 Linearity and Continuity 1 (10 units) which together total 30 units.

For students who were previously undertaking the MATH1110/MATH1120 pathway you are still required to take MATH2340 Linearity and Continuity 1. Should you have remaining elective courses you are permitted, but not required, to take STAT2020 Predictive Analysis and/or choose one additional 10-unit 2000 level Mathematics Directed course each of these would count as one 10-unit Elective.

Option 2 Pathway: MATH1210 Mathematical Discovery 1 (10 units) and MATH1220 Mathematical Discovery 2 (10 units) and one 10-unit Elective course which together total 30 units.

For students who were previously undertaking the MATH1210/MATH1220 pathway, you are not required to use your elective course to take MATH2340 Linearity and Continuity 1. Should you have remaining elective courses you are permitted, but not required, to take MATH2340 Linearity and Continuity 1, STAT2020 Predictive Analysis and/or choose one additional 10-unit 2000 level Mathematics Directed course each of these would count as one 10-unit Elective.

For students commencing in 2021, they will complete:

- STAT2020 Predictive Analytics (10 units) (core)
- MATH2340 Linearity and Continuity 1 (10 units) (core)
- 20 units of Electives
- 60 units of Mathematics Directed courses:
 - 20 units at the 2000 level and
 - 40 units at the 3000 level.

Bachelor of Mathematics Transition Arrangements

MATHEMATICS DIRECTED COURSES

Course Code and Title

(Not yet completed)

New Course Code and Title

(Course to be completed from 2021 onwards as offered)

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2000 LEVEL DIRECTED COURSES

Choose 10 units from the following directed courses

MATH2330 Real Analysis	If you have not yet done this course, then choose another 2000 level Directed course from the list.
MATH2730 Operations Research 1	If you have not yet done this course, then choose another 2000 level Directed course from the list.
STAT2000 Applied Statistics and Research Methods	STAT2000 Applied Statistics and Research Methods
	MATH2800 Ordinary Differential Equations

	<p>STAT2300 Statistical Inference Note: <i>If you have completed STAT3010 Statistical Inference you cannot take this course.</i></p> <p>MATH2242 Complex Analysis Note: <i>If you have completed MATH3242 Complex Analysis you cannot take this course.</i></p>
<p>3000 LEVEL DIRECTED COURSES Choose 40 units from the following directed courses</p>	
MATH3120 Algebra	MATH3120 Algebra
MATH3170 Number Theory	MATH3170 Number Theory
MATH3180 Topology	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3205 Fourier Analysis	MATH3205 Fourier Analysis
MATH3210 Directed Studies in Mathematics	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3242 Complex Analysis	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3400 Research Topics in Mathematics	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3510 Combinatorics and Graph Theory	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3700 Advanced Differential Equations	MATH3700 Partial Differential Equations (<i>change to course title only</i>)
MATH3820 Numerical Methods	MATH3820 Numerical Methods
MATH3800 Optimisation (<i>Previously MATH3830 Operations Research 2</i>)	STAT3800 Deterministic and Stochastic Optimisation
MATH3840 Optimisation in Business and Industry	If you have not yet done this course, then choose another 3000 level Directed course from the list.
MATH3850 Industrial Project	If you have not yet done this course, then choose another 3000 level Directed course from the list.
STAT3010 Statistical Inference	If you have not yet done this course, then choose another 3000 level Directed course from the list.
STAT3030 Generalised Linear Models	STAT3030 Generalised Linear Models
STAT3040 Time Series Analysis	STAT3040 Forecasting Linear Time Series (<i>change to course title only</i>)
STAT3100 Systems Thinking (<i>previously STAT3100 Total Quality Management</i>)	STAT3100 Systems Thinking
STAT3120 Applied Bayesian Methods	If you have not yet done this course, then choose another 3000 level Directed course from the list.
STAT3170 Surveys and Experiments	If you have not yet done this course, then choose another 3000 level Directed course from the list.
STAT3990 Topics in Statistics	If you have not yet done this course, then choose another 3000 level Directed course from the list.