## **Bachelor of Science (Advanced)**

INFORMATION FOR STUDENTS WHO COMMENCED IN THE BACHELOR OF SCIENCE (ADVANCED) [40166] PRIOR TO 2023

The University is incorporating Work Integrated Learning (WIL) into all undergraduate programs as a 10-unit Core Course (SCIE3002 – WIL for the Sciences), for students commencing in the program from 2023 onwards. WIL provides students from all disciplines and backgrounds with the opportunity to gain real world work experience and improve employability outcomes.

Students who commenced the program prior to 2023 are not required to complete SCIE3002.

## **Transition Arrangements**

Pre-2023 students who have yet to commence or successfully complete SCIE3003A/B, must complete SCIE3003, plus an additional 10 units from any 2000/3000 level disciplinary courses available from **any of** the majors listed within this program or SCIE3002 (first time of offer **Semester 1 2024)**. Students who self-select may complete SCIE3002 as part of their program.

Students who have **successfully completed SCIE3003A** but **not completed SCIE3003B** by the end of 2022, will need to complete SCIE3003B in **Semester 1 2023**, which will be the last offering of this course.

Students who have completed SCIE3003A and SCIE3003B will continue with the current program structure.

The table below provides a summary of the changes to the Bachelor of Science (Advanced):

2022 Program Requirements	2023 Program Requirements	Notes
Core Courses (70 Units)	Core Courses (70 Units)	
SCIE1002 – Multidisciplinary Laboratories (10 units)	SCIE1002 – Multidisciplinary Laboratories (10 units)	No change
SCIE1003 – Advanced Scientific Thinking (10 units)	SCIE1003 – Advanced Scientific Thinking (10 units)	No change
STAT1070 – Statistics for the Sciences (10 units)	STAT1070 – Statistics for the Sciences (10 units)	No change
SCIE2001 – Professional Employment Skills (10 units)	SCIE2001 – Professional Employment Skills (10 units)	No change
SCIE2003 – Advanced Interdisciplinary Challenges (10 units)	SCIE2003 – Advanced Interdisciplinary Challenges (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
SCIE3003A – Advanced Transdisciplinary Capstone: Planning and Implementing (10 units)		<b>Discontinued</b> Students who have not successfully completed SCIE3003A/B must complete SCIE3003 plus an
		additional 10 units from any 2000/3000 level disciplinary courses available from <b>any of</b> the majors listed within this program.
SCIE3003B – Advanced Transdisciplinary Capstone:		Discontinued
Implementing and Communicating (10 units)		Students who have successfully completed SCIE3003A and not completed SCIE3003B, will need to complete SCIE3003B in Semester 1 2023 (last offering of this course).
	SCIE3003 – Advanced Transdisciplinary Capstone (10 units)	New core course Pre-2023 students who have not successfully completed SCIE3003A/B by the end of 2022, must complete SCIE3003, plus an additional 10 units from any 2000/3000 level disciplinary courses available from <b>any of</b> the majors listed within this program.
	Work Integrated Learning Placement SCIE3002 – WIL for the Sciences (10 units)	New core course available from Sem 1 2024 Students who have not successfully completed SCIE3003A/B must complete SCIE3003, plus an additional 10 units from any 2000/3000 level disciplinary courses available from <b>any of</b> the majors listed within this program or SCIE3002 (first time of offer <b>Sem 1 2024)</b> . Students who self-select may complete SCIE3002 as part of their program.
Mathematics Directed Courses (10 Units) Complete 10 units from the following directed courses. Which course you should complete will depend on your previous mathematical background, please refer to each course handbook for more information.	Mathematics Directed Courses (10 Units) Complete 10 units from the following directed courses. Which course you should complete will depend on your previous mathematical background, please refer to each course handbook for more information.	
MATH1001 – Preparatory Studies in Mathematics (10 units)	MATH1001 – Preparatory Studies in Mathematics (10 units)	No change
MATH1002 – Foundational Studies in Mathematics (10 units)	MATH1002 – Foundational Studies in Mathematics (10 units)	No change
MATH1110 – Mathematics for Engineering, Science and Technology 1 (10 units)	MATH1110 – Mathematics for Engineering, Science and Technology 1 (10 units)	No change

Information is correct as of October 2022 and subject to change.

2022 Program Requirements	2023 Program Requirements	Notes
Biodiversity and Conservation Major (80 Units)		
<b>Compulsory Courses (50 units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	<b>Compulsory Courses (50 units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	
ENVS1001 – Environmental Concepts and Methods (10 units)	ENVS1001 – Environmental Concepts and Methods (10 units)	No change
ENVS1003 – Environmental Values and Ethics (10 units)	ENVS1003 – Environmental Values and Ethics (10 units)	No change
ENVS3003 – Conservation Biology (10 units)	ENVS3003 – Conservation Biology (10 units)	No change
ENVS3004 – Ecotoxicology (10 units)	ENVS3004 – Ecotoxicology (10 units)	No change
ENVS3005 – Animal Behaviour (10 units)	ENVS3005 – Animal Behaviour (10 units)	No change
<b>2000 Level Directed Courses (20 Units)</b> Complete 20 units from the following directed courses.	<b>2000 Level Directed Courses (20 Units)</b> Complete 20 units from the following directed courses.	
ENVS2004 – Ecology (10 units)	ENVS2004 – Ecology (10 units)	No change
ENVS2005 – Management of Australian Flora (10 units)	ENVS2005 – Management of Australian Flora (10 units)	No change
ENVS3006 – Ecology and Management of Wildlife (10 units)	ENVS3006 – Ecology and Management of Wildlife (10 units)	No change
<b>3000 Level Directed Courses (10 Units)</b> Complete 10 units from the following directed courses.	<b>3000 Level Directed Courses (10 Units)</b> Complete 10 units from the following directed courses.	
ENVS3009 – Advanced Water Science and Resource Management (10 units)	ENVS3009 – Advanced Water Science and Resource Management (10 units)	No change
MARI3320 – Experimental Design and Analysis in Ecology (10 units)	MARI3320 – Experimental Design and Analysis in Ecology (10 units)	No change
SCIE3500 – Research Integrated Learning (10 units)	SCIE3500 – Research Integrated Learning (10 units)	No change
SRMT3060 – Restoration Ecology (10 units)	SRMT3060 – Restoration Ecology (10 units)	No change

2023 Program Requirements	Notes
<b>Compulsory Courses (60 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major	
CHEM1010 – Introductory Chemistry I (10 units)	No change
CHEM1020 – Introductory Chemistry II (10 units)	No change
CHEM2110 – Applied Analytical Chemistry (10 units)	No change
CHEM2210 – Materials Chemistry (10 units)	No change
CHEM2410 – Physical Chemistry (10 units)	No change
CHEM3110 – Instrumental Chemical Analysis (10 units)	No change
<b>3000 Level Directed Courses (20 Units)</b> Complete 20 units from the following directed courses.	
CHEM3210 – Functional Materials (10 units)	No change
CHEM3410 – Energy and Materials (10 units)	No change
CHEM3580 – Colloids, Interfaces and Soft Matter (10 units)	No change
<b>Compulsory Courses (50 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	
GEOS1040 – Earth: The Dynamic Planet (10 units)	No change
GEOS1050 – Earth Processes and Products (10 units)	No change
	Compulsory Courses (60 Units)   Complete the following compulsory courses to fulfil   the requirements of this major.   CHEM1010 – Introductory Chemistry I (10 units)   CHEM1020 – Introductory Chemistry II (10 units)   CHEM2110 – Applied Analytical Chemistry (10 units)   CHEM2210 – Materials Chemistry (10 units)   CHEM2410 – Physical Chemistry (10 units)   CHEM3110 – Instrumental Chemical Analysis (10 units)   3000 Level Directed Courses (20 Units)   Complete 20 units from the following directed courses.   CHEM3210 – Functional Materials (10 units)   CHEM3410 – Energy and Materials (10 units)   CHEM3410 – Colloids, Interfaces and Soft Matter (10 units)   CHEM3580 – Colloids, Interfaces and Soft Matter (10 units)

2022 Program Requirements	2023 Program Requirements	Notes
GEOS2080 – Earth Sciences Fieldwork (10 units)	GEOS2080 – Earth Sciences Fieldwork (10 units)	No change
GEOS2161 – Spatial Science (10 units)	GEOS2161 – Spatial Science (10 units)	No change
GEOS3250 – Advanced Spatial Science (10 units)	GEOS3250 – Advanced Spatial Science (10 units)	No change
2000 Level Directed Courses (10 Units)	2000 Level Directed Courses (10 Units)	
Complete 10 units from the following directed courses.	Complete 10 units from the following directed courses.	
ENVS2009 – Catchment and Water Resource Management (10 units)	ENVS2009 – Catchment and Water Resource Management (10 units)	No change
GEOS2050 – Catchments and Climate (10 units)	GEOS2050 – Catchments and Climate (10 units)	No change
GEOS2060 – Soil Properties and Processes (10 units)	GEOS2060 – Soil Properties and Processes (10 units)	No change
SCIE2223 – Weather and Waves (10 units)	SCIE2223 – Weather and Waves (10 units)	No change
3000 Level Directed Courses (20 Units)	3000 Level Directed Courses (20 Units)	
Complete 20 units from the following directed courses.	Complete 20 units from the following directed courses.	
ECON3006 – Environmental Economics (10 units)	ECON3006 – Environmental Economics (10 units)	No change
ENVS3007 – Environmental Remediation (10 units)	ENVS3007 – Environmental Remediation (10 units)	No change
ENVS3009 – Advanced Water Science and Resource Management (10 units)	ENVS3009 – Advanced Water Science and Resource Management (10 units)	No change
GEOS3220 – Coastal Environments and Processes (10 units)	GEOS3220 – Coastal Environments and Processes (10 units)	No change
GEOS3280 – Global Change and the Rise of Modern Environments (10 units)	GEOS3280 – Global Change and the Rise of Modern Environments (10 units)	No change
GEOS3340 – Climate Change and Resource Management (10 units)	GEOS3340 – Climate Change and Resource Management (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
Geography Major (80 Units)	•	
Compulsory Courses (40 Units)	Compulsory Courses (40 Units)	
Complete the following compulsory courses to fulfil	Complete the following compulsory courses to fulfil	
the requirements of this major.	the requirements of this major.	
GEOG1020 – Introduction to Human Geography	GEOG1020 – Introduction to Human Geography	No change
(10 units)	(10 units)	
GEOS1040 – Earth: The Dynamic Planet (10 units)	GEOS1040 – Earth: The Dynamic Planet (10 units)	No change
GEOS2161 – Spatial Science (10 units)	GEOS2161 – Spatial Science (10 units)	No change
GEOS3250 – Advanced Spatial Science (10 units)	GEOS3250 – Advanced Spatial Science (10 units)	No change
2000 Level Directed Courses (10 Units)	2000 Level Directed Courses (10 Units)	
Complete 10 units from the following directed	Complete 10 units from the following directed	
courses.	courses.	
ENVS2002 – Environmental Legislation and Planning	ENVS2002 – Environmental Legislation and Planning	No change
(10 units)	(10 units)	
ENVS2008 – The Sustainable Society (10 units)	ENVS2008 – The Sustainable Society (10 units)	No change
GEOG2080 – Cities and Regions (10 units)	GEOG2080 – Cities and Regions (10 units)	No change
GEOG2130 – Geographies of Development (10 units)	GEOG2130 – Geographies of Development (10 units)	No change
GEOS2050 – Catchments and Climate (10 units)	GEOS2050 – Catchments and Climate (10 units)	No change
GEOS2080 – Earth Sciences Fieldwork (10 units)	GEOS2080 – Earth Sciences Fieldwork (10 units)	No change
SOCS2400 – Applied Social Research (10 units)	SOCS2400 – Applied Social Research (10 units)	No change
3000 Level Directed Courses (30 Units)	3000 Level Directed Courses (30 Units)	
Complete 30 units from the following directed courses.	Complete 30 units from the following directed courses.	
ENVS3001 – Integrated Impact Assessment (10 units)	ENVS3001 – Integrated Impact Assessment (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
ENVS3006 – Surviving the Anthropocene:	ENVS3006 – Surviving the Anthropocene:	No change
Sustainability in the 21st Century (10 units)	Sustainability in the 21st Century (10 units)	
ENVS3007 – Environmental Remediation (10 units)	ENVS3007 – Environmental Remediation (10 units)	No change
ENVS3008 – Organisational Placement in the Environmental Sector (10 units)		<b>Removed</b> from directed course list.
GEOG3090 – Society and Space (10 units)	GEOG3090 – Society and Space (10 units)	No change
GEOG3300 – Rethinking Development (10 units)	GEOG3300 – Rethinking Development (10 units)	No change
GEOS3220 – Coastal Environments and Processes (10 units)	GEOS3220 – Coastal Environments and Processes (10 units)	No change
GEOS3280 – Global Change and the Rise of Modern Environments (10 units)	GEOS3280 – Global Change and the Rise of Modern Environments (10 units)	No change
GEOS3340 – Climate Change and Resource	GEOS3340 – Climate Change and Resource	No change
Management (10 units)	Management (10 units)	
Biological Sciences Major (80 Units)		
Compulsory Courses (50 Units)	Compulsory Courses (50 Units)	
Complete the following compulsory courses as well	Complete the following compulsory courses as well	
as 30 units from one pathway to fulfil the	as 30 units from one pathway to fulfil the	
requirements of this major.	requirements of this major.	
BIOL1001 – Molecules, Cells and Organisms (10 units)	BIOL1001 – Molecules, Cells and Organisms (10 units)	No change
BIOL1002 – Organisms to Ecosystems (10 units)	BIOL1002 – Organisms to Ecosystems (10 units)	No change
BIOL2001 – Molecular Laboratory Skills for Biological Sciences (10 units)	BIOL2001 – Molecular Laboratory Skills for Biological Sciences (10 units)	No change
BIOL2002 – Laboratory Skills in Biological Systems (10 units)	BIOL2002 – Laboratory Skills in Biological Systems (10 units)	No change
BIOL3001 – Advanced Laboratory Skills in Biological Sciences (10 units)	BIOL3001 – Advanced Laboratory Skills in Biological Sciences (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
Microbiology Pathway (30 Units)		
BIOL2090 – Microbial Biology (10 units)	BIOL2090 – Microbial Biology (10 units)	No change
BIOL3090 – Molecular Biology (10 units)	BIOL3090 – Molecular Biology (10 units)	No change
BIOL3100 – Microbiology (10 units)	BIOL3100 – Microbiology (10 units)	No change
Animal and Plant Biology Pathway (30 Units)		
BIOL2220 – Plant Adaptation to Climate Change (10 units)	BIOL2220 – Plant Adaptation to Climate Change (10 units)	No change
BIOL3020 – Animal Physiology, Reproduction and Development (10 units)	BIOL3020 – Animal Physiology, Reproduction and Development (10 units)	No change
BIOL3090 – Molecular Biology (10 units)	BIOL3090 – Molecular Biology (10 units)	No change
Mathematics Major (80 Units)		
<b>Compulsory Courses (50 Units)</b> Mathematics Directed Course MATH1110 is required for this major, as it is a prerequisite for enrolling in MATH1120. Complete the following compulsory courses to fulfil the requirements of this major.	<b>Compulsory Courses (50 Units)</b> Mathematics Directed Course MATH1110 is required for this major, as it is a prerequisite for enrolling in MATH1120. Complete the following compulsory courses to fulfil the requirements of this major.	
MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	No change
MATH2242 – Complex Analysis (10 units)	MATH2242 – Complex Analysis (10 units)	No change
MATH2310 – Calculus of Science and Engineering (10 units)	MATH2310 – Calculus of Science and Engineering (10 units)	No change
MATH2340 – Linearity and Continuity 1 (10 units)	MATH2340 – Linearity and Continuity 1 (10 units)	No change
MATH2800 – Ordinary Differential Equations (10 units)	MATH2800 – Ordinary Differential Equations (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
Directed Courses (30 Units)	Directed Courses (30 Units)	
Complete 30 units from the following directed	Complete 30 units from the following directed	
courses.	courses.	
MATH3120 – Algebra (10 units)	MATH3120 – Algebra (10 units)	No change
MATH3170 – Number Theory (10 units)	MATH3170 – Number Theory (10 units)	No change
MATH3205 – Fourier Analysis (10 units)	MATH3205 – Fourier Analysis (10 units)	No change
MATH3700 – Partial Differential Equations (10 units)	MATH3700 – Partial Differential Equations (10 units)	No change
MATH3820 – Numerical Methods (10 units)	MATH3820 – Numerical Methods (10 units)	No change
SCIE3500 – Research Integrated Learning (10 units)	SCIE3500 – Research Integrated Learning (10 units)	No change
STAT3800 – Deterministic and Stochastic	STAT3800 – Deterministic and Stochastic	No change
Optimisation (10 units)	Optimisation (10 units)	
Chemical (Medicinal and Organic) Major (80 Units)		
Compulsory Courses (60 Units)	Compulsory Courses (60 Units)	
Complete the following compulsory courses to fulfil	Complete the following compulsory courses to fulfil	
the requirements of this major.	the requirements of this major.	
CHEM1010 – Introductory Chemistry I (10 units)	CHEM1010 – Introductory Chemistry I (10 units)	No change
CHEM1020 – Introductory Chemistry II (10 units)	CHEM1020 – Introductory Chemistry II (10 units)	No change
CHEM2110 – Applied Analytical Chemistry (10 units)	CHEM2110 – Applied Analytical Chemistry (10 units)	No change
CHEM2310 – Organic Chemistry (10 units)	CHEM2310 – Organic Chemistry (10 units)	No change
CHEM2410 – Physical Chemistry (10 units)	CHEM2410 – Physical Chemistry (10 units)	No change
CHEM3110 – Instrumental Chemical Analysis (10 units)	CHEM3110 – Instrumental Chemical Analysis (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
Directed Courses (20 Units)	Directed Courses (20 Units)	
Complete 20 units from the following directed	Complete 20 units from the following directed	
courses.	courses.	
CHEM3210 – Functional Materials (10 units)	CHEM3210 – Functional Materials (10 units)	No change
CHEM3310 – Molecular Organic Synthesis (10 units)	CHEM3310 – Molecular Organic Synthesis (10 units)	No change
CHEM3550 – Medicinal and Biological Chemistry (10 units)	CHEM3550 – Medicinal and Biological Chemistry (10 units)	No change
Physics Major (120 Units)		
<b>Compulsory Courses (110 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	<b>Compulsory Courses (110 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	
MATH1110 – Mathematics for Engineering, Science and Technology 1 (10 units)	MATH1110 – Mathematics for Engineering, Science and Technology 1 (10 units)	No change
MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	No change
PHYS1210 – Advanced Physics I (10 units)	PHYS1210 – Advanced Physics I (10 units)	No change
PHYS1220 – Advanced Physics II (10 units)	PHYS1220 – Advanced Physics II (10 units)	No change
MATH2310 – Calculus of Science and Engineering (10 units)	MATH2310 – Calculus of Science and Engineering (10 units)	No change
PHYS2111 – Classical Physics 1 (10 units)	PHYS2111 – Classical Physics 1 (10 units)	No change
PHYS2112 – Classical Physics 2 (10 units)	PHYS2112 – Classical Physics 2 (10 units)	No change
PHYS2211 – Modern Physics 1 (10 units)	PHYS2211 – Modern Physics 1 (10 units)	No change
PHYS3111 – Biophysics (10 units)	PHYS3111 – Biophysics (10 units)	No change
PHYS3112 – Photonics (10 units)	PHYS3112 – Photonics (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
PHYS3211 – Quantum Information Science (10 units)	PHYS3211 – Quantum Information Science (10 units)	No change
Directed Courses (10 Units)	Directed Courses (10 Units)	
Complete 10 units from the following directed	Complete 10 units from the following directed	
courses.	courses.	
MATH2242 – Complex Analysis (10 units)	MATH2242 – Complex Analysis (10 units)	No change
MATH3820 – Numerical Methods (10 units)	MATH3820 – Numerical Methods (10 units)	No change
Psychology Major (80 Units)		
Compulsory Courses (60 Units)	Compulsory Courses (60 Units)	
Complete the following compulsory courses to fulfil	Complete the following compulsory courses to fulfil	
the requirements of this major.	the requirements of this major.	
PSYC1010 – Psychology Introduction 1 (10 units)	PSYC1010 – Psychology Introduction 1 (10 units)	No change
PSYC1020 – Psychology Introduction 2 (10 units)	PSYC1020 – Psychology Introduction 2 (10 units)	No change
PSYC2300 – Cognitive Psychology (10 units)	PSYC2300 – Cognitive Psychology (10 units)	No change
PSYC2400 – Biological Psychology (10 units)	PSYC2400 – Biological Psychology (10 units)	No change
PSYC3000 – Advanced Research Methods and	PSYC3000 – Advanced Research Methods and	No change
Statistics in Psychology (10 units)	Statistics in Psychology (10 units)	
PSYC3800 – Advanced Special Topics in Psychology	PSYC3800 – Advanced Special Topics in Psychology	No change
(10 units)	(10 units)	
Directed Courses (20 Units)	Directed Courses (20 Units)	
Complete 20 units from the following directed	Complete 20 units from the following directed	
courses.	courses.	
ENVS3005 – Animal Behaviour (10 units)	ENVS3005 – Animal Behaviour (10 units)	No change
PSYC3001 – Advanced Psychological Measurement (10 units)	PSYC3001 – Advanced Psychological Measurement (10 units)	No change
PSYC3301 – Advanced Perception and Learning in Psychology (10 units)	PSYC3301 – Advanced Perception and Learning in Psychology (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes	
Statistics Major (80 Units)	Statistics Major (80 Units)		
<b>Compulsory Courses (70 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major.	<b>Compulsory Courses (70 Units)</b> Complete the following compulsory courses to fulfil the requirements of this major.		
MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	MATH1120 – Mathematics for Engineering, Science and Technology 2 (10 units)	No change	
STAT1300 – Fundamentals of Statistics (10 units)	STAT1300 – Fundamentals of Statistics (10 units)	No change	
STAT2000 – Applied Statistics and Research Methods (10 units)	STAT2000 – Applied Statistics and Research Methods (10 units)	No change	
STAT3030 – Generalised Linear Models (10 units)	STAT3030 – Generalised Linear Models (10 units)	No change	
STAT3040 – Forecasting with Linear Time Series Models (10 units)	STAT3040 – Forecasting with Linear Time Series Models (10 units)	No change	
STAT3100 – Systems Thinking for an Integrated Workforce (10 units)	STAT3100 – Systems Thinking for an Integrated Workforce (10 units)	No change	
STAT3800 – Deterministic and Stochastic Optimisation (10 units)	STAT3800 – Deterministic and Stochastic Optimisation (10 units)	No change	
<b>Directed Courses (10 Units)</b> Complete 10 units from the following directed courses.	<b>Directed Courses (10 Units)</b> Complete 10 units from the following directed courses.		
STAT2020 – Predictive Analytics (10 units)	STAT2020 – Predictive Analytics (10 units)	No change	
STAT2300 – Statistical Inference (10 units)	STAT2300 – Statistical Inference (10 units)	No change	

If you have any questions regarding your remaining program, please email **<u>ProgramAdvice@newcastle.edu.au</u>**.