Bachelor of Science

INFORMATION FOR STUDENTS WHO COMMENCED IN THE BACHELOR OF SCIENCE [40165] 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 SCIE3001A/B, must complete SCIE3001, plus 10 units of additional 2000/3000 disciplinary courses available from **any of** the majors listed in the 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 SCIE3001A** but **not completed SCIE3001B**, will need to complete SCIE3001B in **Semester 1 2023**, which will be the last offering of this course.

Students who have completed SCIE3001A and SCIE3001B will continue with the current program structure.

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

2022 Program Requirements	2023 Program Requirements	Notes
Core Courses (70 Units)	**Core Courses (70 Units)**	
SCIE1001 – Professional Scientific Thinking (10 units)	SCIE1001 – Professional Scientific Thinking (10 units)	No change
SCIE1002 – Multidisciplinary Laboratories (10 units)	SCIE1002 – Multidisciplinary Laboratories (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
SCIE2002 – Interdisciplinary Challenges (10 units)	SCIE2002 – Interdisciplinary Challenges (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
SCIE3001A – Transdisciplinary Capstone: Planning and Implementing (10 units)		**Discontinued** Students who have not successfully completed SCIE3001A/B must complete SCIE3001, plus 10 units of additional 2000/3000 level disciplinary courses available from **any of** the majors listed in the program.
SCIE3001B – Transdisciplinary Capstone: Implementing and Communicating (10 units)		**Discontinued** Students who have successfully completed SCIE3001A and not completed SCIE3001B, will need to complete SCIE3001B in Semester 1 2023 (last offering of this course).
	SCIE3001 – Transdisciplinary Capstone (10 units)	**New core course** Students who have not successfully completed SCIE3001A/B must complete SCIE3001, plus 10 units of additional 2000/3000 level disciplinary course available from **any of** the majors listed in the program.
	Work Integrated Learning Placement SCIE3002 – WIL for the Sciences (10 units)	**New core course available from Sem 1 2024** Pre-2023 students who have not successfully completed SCIE3001A/B must complete SCIE3001, plus an additional 10 units from any 2000/3000 level disciplinary courses available from **any of** the majors listed within the program or SCIE3002 (first time of offer **Sem 1 2024)**. 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. Please note that some disciplines require a minimum level of mathematical knowledge. MATH1002 or higher is required for a Chemistry major. MATH1110 is required for Physics or Mathematics majors.	**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. Please note that some disciplines require a minimum level of mathematical knowledge. MATH1002 or higher is required for a Chemistry major. MATH1110 is required for Physics or Mathematics majors.	
MATH1001 – Preparatory Studies in Mathematics (10 units)	MATH1001 – Preparatory Studies in Mathematics (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
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
Biodiversity and Conservation Major (80 Units)		
Compulsory Courses (50 units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (50 units)** 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
2000 Level Directed Courses (20 Units) Complete 20 units from the following directed courses.	**2000 Level Directed Courses (20 Units)** 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
ENVS2006 – Ecology and Management of Wildlife (10 units)	ENVS2006 – Ecology and Management of Wildlife (10 units)	No change
3000 Level Directed Courses (10 Units) Complete 10 units from the following directed courses.	**3000 Level Directed Courses (10 Units)** 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

2022 Program Requirements	2023 Program Requirements	Notes
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
Chemistry (Advanced Materials) Major (80 Units)		
Compulsory Courses (60 Units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (60 Units)** Complete the following compulsory courses to fulfil 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
CHEM2210 – Materials Chemistry (10 units)	CHEM2210 – Materials 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
3000 Level Directed Courses (20 Units) Complete 20 units from the following directed courses.	**3000 Level Directed Courses (20 Units)** Complete 20 units from the following directed courses.	
CHEM3210 – Functional Materials (10 units)	CHEM3210 – Functional Materials (10 units)	No change
CHEM3410 – Energy and Materials (10 units)	CHEM3410 – Energy and Materials (10 units)	No change
CHEM3580 – Colloids, Interfaces and Soft Matter (10 units)	CHEM3580 – Colloids, Interfaces and Soft Matter (10 units)	No change
Earth Sciences Major (80 Units)		
Compulsory Courses (50 Units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (50 Units)** Complete the following compulsory courses to fulfil the requirements of this major.	
GEOS1040 – Earth: The Dynamic Planet (10 units)	GEOS1040 – Earth: The Dynamic Planet (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
GEOS1050 – Earth Processes and Products (10 units)	GEOS1050 – Earth Processes and Products (10 units)	No change
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) Complete 10 units from the following directed courses.	**2000 Level Directed Courses (10 Units)** 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) Complete 20 units from the following directed courses.	**3000 Level Directed Courses (20 Units)** 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) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (40 Units)** Complete the following compulsory courses to fulfil the requirements of this major.	
GEOG1020 – Introduction to Human Geography (10 units)	GEOG1020 – Introduction to Human Geography (10 units)	No change
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) Complete 10 units from the following directed courses.	**2000 Level Directed Courses (10 Units)** Complete 10 units from the following directed courses.	
ENVS2002 – Environmental Legislation and Planning (10 units)	ENVS2002 – Environmental Legislation and Planning (10 units)	No change
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) Complete 30 units from the following directed courses.	**3000 Level Directed Courses (30 Units)** 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: Sustainability in the 21st Century (10 units)	ENVS3006 – Surviving the Anthropocene: Sustainability in the 21st Century (10 units)	No change
ENVS3007 – Environmental Remediation (10 units)	ENVS3007 – Environmental Remediation (10 units)	No change
ENVS3008 – Organisational Placement in the Environmental Sector (10 units)		**Removed** 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 Management (10 units)	GEOS3340 – Climate Change and Resource Management (10 units)	No change
Biological Sciences Major (80 Units)		
Compulsory Courses (50 Units) Complete the following compulsory courses as well as 30 units from one pathway to fulfil the requirements of this major.	**Compulsory Courses (50 Units)** Complete the following compulsory courses as well as 30 units from one pathway to fulfil the 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)		
Compulsory Courses (50 Units) 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.	**Compulsory Courses (50 Units)** 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
Directed Courses (30 Units) Complete 30 units from the following directed courses.	**Directed Courses (30 Units)** Complete 30 units from the following directed courses.	
MATH3120 – Algebra (10 units)	MATH3120 – Algebra (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
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 Optimisation (10 units)	STAT3800 – Deterministic and Stochastic Optimisation (10 units)	No change
Chemical (Medicinal and Organic) Major (80 Units)		
Compulsory Courses (60 Units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (60 Units)** Complete the following compulsory courses to fulfil 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
Directed Courses (20 Units) Complete 20 units from the following directed courses.	**Directed Courses (20 Units)** Complete 20 units from the following directed courses.	
CHEM3210 – Functional Materials (10 units)	CHEM3210 – Functional Materials (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
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)		
Compulsory Courses (110 Units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (110 Units)** 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
PHYS3211 – Quantum Information Science (10 units)	PHYS3211 – Quantum Information Science (10 units)	No change

2022 Program Requirements	2023 Program Requirements	Notes
Directed Courses (10 Units) Complete 10 units from the following directed courses.	**Directed Courses (10 Units)** Complete 10 units from the following directed 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) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (60 Units)** Complete the following compulsory courses to fulfil 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 Statistics in Psychology (10 units)	PSYC3000 – Advanced Research Methods and Statistics in Psychology (10 units)	No change
PSYC3800 – Advanced Special Topics in Psychology (10 units)	PSYC3800 – Advanced Special Topics in Psychology (10 units)	No change
Directed Courses (20 Units) Complete 20 units from the following directed courses.	**Directed Courses (20 Units)** Complete 20 units from the following directed 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)		
Compulsory Courses (70 Units) Complete the following compulsory courses to fulfil the requirements of this major.	**Compulsory Courses (70 Units)** 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
Directed Courses (10 Units) Complete 10 units from the following directed courses.	**Directed Courses (10 Units)** 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 **ProgramAdvice@newcastle.edu.au**.