Bachelor of Science

SINGLE MAJOR

See the last page for some helpful hints & tips!

THE UNIVERSITY OF NEWCASTLE AUSTRALIA

Commencing 2014-2018 **Studying at Callaghan or Ourimbah**

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 prior advice from your Program Advisor to ensure you remain on track.

Year 1	DIRECTED 1000 level	DIRECTED 1000 level	MAJOR 1000 level	MAJOR 1000 level	APPROVED SCIENCE 1000 level or MAJOR 1000 level	APPROVED SCIENCE 1000 level	ELECTIVE	ELECTIVE
Year 2	APPROVED SCIENCE 2000 level or MAJOR 2000 level	MAJOR 2000 level	MAJOR 2000 level	MAJOR 2000 level	ELECTIVE	ELECTIVE	ELECTIVE 2000 or 3000 level	ELECTIVE 2000 or 3000 level
Year 3	MAJOR 3000 level	MAJOR 3000 level	MAJOR 3000 level	MAJOR 3000 level	APPROVED SCIENCE 3000 level or MAJOR 3000 level	APPROVED SCIENCE 3000 level or MAJOR 3000 level	ELECTIVE 2000 or 3000 level	ELECTIVE 2000 or 3000 level

Program Plan Key: = Major = Directed = Approved Science = Electives

To be eligible to graduate make sure you have completed 240 units (10 units = 1 course unless otherwise specified) which meet the following criteria:

- ✓ Major courses - A minimum of 80 units (Refer to Program Handbook for individual requirements for each Major).
- ✓ Directed courses - 20 units. Exemptions may apply, please refer to the Program Handbook.
- ✓ Approved Science Courses - A minimum of 20 units. These are in addition to Major and Directed courses, with a maximum 20 units at 1000 level. See the Program Handbook for information regarding these courses.
- ✓ Electives - 80 units. Visit the Course Handbook to see a list of available Electives.
- ✓ Students must not exceed 100 units at 1000 level.
- ✓ Students must take a minimum of 60 units at 3000 level.
- ✓ To find out which MATH Directed courses you should enrol in see the directed course list on page 3. For further information please see Enrolling in Maths.
- ✓ The Mathematics and Statistics Majors can only be undertaken as part of a Co-Major. Students interested in completing a Co-Major or double major, please see the Bachelor of Science Double Major Program Plan for details.
- ✓ Students who perform well during the program with a credit average (GPA of 5.0) or greater, may apply for a further year of full time (or equivalent part time) study to obtain an Honours degree.
- ✓ The duration of this program is 3 years full time study (40 units per semester) or part time equivalent.
- ✓ The maximum time to complete this program is 8 years.

Some courses have assumed knowledge and/or requisites, please refer to the individual Course Handbook.

The Program Handbook has valuable information on program structure and requirements, if you are intending on studying part time or varying from this program plan please seek prior advice from your Program Advisor.

See the next page for a list of Directed courses

Bachelor of Science Directed Courses

Directed Mathematics Courses

All students must complete one of the Mathematics Directed courses. Students completing the Chemistry major must complete MATH1002 or higher. However, an exemption is available for students who have demonstrated a performance in mathematics equivalent to or exceeding the attainment of Band 5 in the subject "Mathematics" (formerly 2-unit Mathematics) in the NSW HSC. Note that different majors have different mathematics requirements.

MATH1001	Preparatory Studies in Mathematics	This course is for students who have not studied, or who have not succeeded in Mathematics at HSC level. It is not recommended for those wishing to undertake a Chemistry, Photonics or Physics major.
MATH1002	Foundational Studies in Mathematics	This course is suitable for students with a background in high-school algebra but who have not studied, or who have not succeeded in, HSC Mathematics. This course can be taken for students undertaking the Chemistry major. It is not recommended for those wishing to undertake a Photonics or Physics major.
MATH1110	Mathematics for Eng, Science & Tech 1	This course is for students who have obtained a band 5 or better in HSC Mathematics, or have completed HSC Mathematics Extension 1 or 2.
MATH1120	Mathematics for Eng, Science & Tech 2	This course is for students who have obtained a band 5 or better in HSC Mathematics, or have completed HSC Mathematics Extension 1 or 2.

Note: MATH1210 & MATH1220 discontinued, if you have already completed MATH1210 or MATH1220 the course will still count towards your program.

Directed Statistics Courses

Only one of STAT1020 or STAT1070 may count as the 1000 level STAT directed course.

STAT1020	Statistical Reasoning and Literacy	This course is for students undertaking a major in Chemistry or Geography.
STAT1070	Statistics for the Sciences	Students undertaking a major in Biological Sciences, Earth Sciences, Marine Science, Photonics, Physics, Psychology or Sustainable Resource Management, must complete STAT1070.

Bachelor of Science Major Sequences – Note: please refer to the Transition Document on the Program Handbook for changes to major courses.

A major is an area of study that you wish to focus on in your program. A course will count towards your major if it is listed as a compulsory or directed course under the relevant major in the handbook. You must complete at least 90 units in your major.

**This Major structure does not apply to those students completing a Photonics Major. See below.*

Subject to change- Please refer to the program handbook for up to date information.

Majors	Courses (Compulsory Courses listed in orange)
Biological Science Major Sequence	BIOL1001 Molecules, Cells and Organisms BIOL1002 Organisms to Ecosystems BIOL1003 Professional Skills for Biological Sciences 1 BIOL2001 Molecular Laboratory Skills for Biological Sciences BIOL2002 Laboratory Skills in Biological Systems BIOL3001 Advanced Laboratory Skills in Biological Sciences 2000 level Biology Directed Courses (10 Units) 3000 level Biology Directed Courses (30 Units)
Chemistry Major Sequence (students must complete MATH1002 before enrolment in CHEM2410)	CHEM1010 Introductory Chemistry I CHEM1020 Introductory Chemistry II CHEM2110 Analytical Chemistry CHEM2210 Inorganic Chemistry CHEM2310 Organic Chemistry CHEM2410 Physical Chemistry (check MATH requisite) 3000 level Chemistry Directed Courses (40 Units)
Marine Science Major Sequence- Ourimbah Campus Only	BIOL1001 Molecules, Cells and Organisms BIOL1002 Organisms to Ecosystems MARI1000 Issues in the Marine Environment SCIE1002 Multidisciplinary Laboratories ENVS2009 Catchment and Water Resource Management MARI2300 Marine Biology MARI2500 Coastal and Marine Ecosystem Services MARI3300 Estuarine Ecology MARI3320 Ecological Methodology 3000 level Marine Science Directed Courses (20 Units)

Majors	Courses (Compulsory Courses listed in orange)
Earth Sciences Major Sequence	GEOS1040 Earth's Dynamic Systems GEOS1050 Earth Processes and Products GEOS2080 Earth Science Field Course GEOS2161 GIS and Remote Sensing GEOS3250 Geographic Information Systems 2000 level Earth Science Directed Courses (10 Units) 3000 level Earth Science Directed Courses (30 Units)
Geography Major Sequence	GEOG1020 Introduction to Human Geography GEOS1040 Earth's Dynamic Systems GEOS2161 GIS and Remote Sensing GEOS3250 Geographic Information Systems 2000 level Geography Directed Courses (20 Units) 3000 level Geography Directed Courses (30 Units)
Photonics Major Sequence- Callaghan Campus Only	ELEC1310 Introduction to Electrical Engineering PHYS1210 Advanced Physics I PHYS1220 Advanced Physics II PHYS2112 Classical Physics 2 SCIE2002 Interdisciplinary Challenges SCIE2003 Advanced Interdisciplinary Challenges ELEC3540 Analog and Digital Communications PHYS3112 Photonics PHYS3211 Quantum Information Science PHYS3212 Nanomaterials SCIE3500 Research Integrated Learning

Bachelor of Science Major Sequences Continued – Note: please refer to the Transition Document on the Program Handbook for changes to major courses.

Majors	Courses (Compulsory Courses listed in orange)
Subject to change- Please refer to the program handbook for up to date information.	
Physics Major Sequence - Callaghan Campus Only	PHYS1210 Advanced Physics I PHYS1220 Advanced Physics II PHYS2112 Classical Physics 2 PHYS2211 Modern Physics 1 2000 level Physics Directed Courses (10 Units) 3000 level Physics Directed Courses (40 Units)
Sustainable Resource Management (SRM) Major Sequence - Ourimbah Campus Only	BIOL1002 Organisms to Ecosystems ENVS1003 Environmental Values and Ethics SCIE1002 Multidisciplinary Laboratories ENVS2005 Ecology and Management of Australian Flora ENVS2006 Ecology and Management of Australian Fauna ENVS2009 Catchment and Water Resource Management ENVS3001 Integrated Impact Assessment SRMT3060 Restoration Ecology 3000 level SRM Directed Courses (20 Units)
Mathematics co-major	MATH1800 Mathematical Modelling MATH2310 Calculus of Science and Engineering MATH2340 Linearity and Continuity 1 Directed course A (20 Units) Directed course B (10 Units) Directed course C (40 Units)

Majors	Courses (Compulsory Courses listed in orange)
Subject to change- Please refer to the program handbook for up to date information.	
Psychology Major Sequence	PSYC1010 Psychology Introduction 1 PSYC1020 Psychology Introduction 2 PSYC2300 Cognitive Psychology STAT2000 Applied Statistics and Research Methods PSYC3000 Advanced Research Methods and Statistics in Psychology PSYC3001 Advanced Psychological Measurement 2000 level Psychology Directed Courses (10 Units) 3000 level Psychology Directed Courses (20 Units)
Statistics co-major	STAT1300 Fundamentals of Statistics STAT2000 Applied Statistics and Research Methods STAT3030 Generalised Linear Models Mathematics Directed course A (20 Units) Mathematics Directed course B (10 Units) Directed courses (30 units)