

Bachelor of Engineering (Honours) (Environmental)

NATURAL SCIENCE MINOR



Commencing in 2015 and 2016



Studying at Callaghan

This Program Plan is an enrolment guide to ensure you are on track to graduate. The courses in coloured boxes have changed for your program. Further details on the teach-out arrangements can be found in your [Program Handbook](#). If at any time you wish to vary from this program plan seek prior advice from your [Academic Program Advisor](#) to ensure you remain on track.



Semester 1

Year 1	CHEM1010 * Introductory Chemistry I	ENGG1500 Introduction to Professional Engineering Replaces GENG1803	MATH1110 Mathematics for Engineering, Science and Technology 1 <i>Replaces option of MATH1110 OR MATH1210</i>	SURV1200 Introduction to Surveying Replaces SURV1110
	CHEM2110 Applied Analytical Chemistry Replaces CHEM2610	CIVL2050 Engineering Computations and Probability	MATH2310 Calculus of Science and Engineering	BIOL1001 Molecules, Cells and Organisms
	CHEE3690 Environ. Process Technology	CIVL3330 Hydrology Replaces CIVL4330	ENVS2002 Environmental Legislation & Planning	ELECTIVE
	ENGG3500 Managing Engineering Projects Replaces GENG3830	CIVL4591 Environmental Engineering Project 1	ELECTIVE	DIRECTED

Semester 2

CHEM1020 * Introductory Chemistry II	CIVL1100 Fundamentals of Engineering Mechanics Replaces GENG1001	ENGG1003 Introduction to Procedural Programming <i>Replaces GENG1002 pre-2017, ENGG1002 pre-2021 In 2021 changed from Sem 2 to Sem 1</i>	MATH1120 Mathematics for Engineering, Science and Technology 2 <i>Replaces option of MATH1210 OR MATH1220</i>
ENGG2300 Engineering Fluid Mechanics Replaces CIVL2310	CIVL2280 Geomechanics 1	SURV3650 GIS and Remote Sensing Replaces SURV2650	BIOL1002 Organisms to Ecosystems
CIVL3410 Hydrobiological Modelling	CIVL3431 Land Surface Process and Management	CIVL4450 Water Engineering	CIVL3470 Contaminant Hydrogeology
CIVL4601 Environmental Engineering Project 2	CIVL4660 # Project S2	ENGG4500 Engineering Complexity Replaces PHIL3910	DIRECTED

Program Plan Key: = Core = Minor = Directed = Elective = Changes from 2017 onwards = Changes from 2019 onwards

To be eligible to graduate make sure you have completed 320 units (10 units = 1 course unless otherwise specified) which meet the following criteria:

- ✓ Core courses – 250 units.
Prior to 2021, students could choose to complete either MATH1110 and MATH1120, *OR* MATH1210 and MATH1220. Choice of maths courses is based on your assumed knowledge. To find out which MATH course you should enrol in please see the [Enrolling in Maths information](#). More information is in your [Program Handbook](#).
After 2021, the option to do MATH1210 and MATH1220 has been removed from the program. *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.
- * CHEM courses – 20 units. Select both CHEM1010 and CHEM1020 (Callaghan) *OR* CHEM1110 and CHEM1120 (Ourimbah).
- # Students may choose to complete either CIVL4640 Project S1 (Semester 1) or CIVL4660 Project S2 (Semester 2), whichever best fits their program. Course content and assessment are identical.
- ✓ Minor – 30 units (20 units in Year 2 and 10 units in Year 4).
- ✓ Electives – 20 units. Visit the [Course Handbook](#) to see a list of available Electives.
- ✓ *Refer to the transition document in the [Program Handbook](#) for further information.*
- ✓ It is also a requirement that students complete a total of 12 weeks of [industrial experience](#).
- ✓ The duration of this program is 4 years full time (40 units per semester) or part time equivalent.
- ✓ The maximum time to complete this program is 10 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 [Academic Program Advisor](#).

See the
next page
for a list of
Directed
courses

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Directed Courses

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

Choose **20 units** from the following Directed courses.

BIOL2010 Biochemistry	BIOL3001 Advanced Laboratory Skills in Biological Sciences
BIOL2011 Fundamentals of Biology and Biochemistry	BIOL3020 Animal Physiology, Reproduction and Development
BIOL2050 Molecular Genetics	BIOL3090 Molecular Biology
BIOL2090 Microbial Biology	BIOL3100 Microbiology
BIOL2220 Plant Adaptation to Climate Change	CHEM3110 Instrumental Chemical Analysis
CHEE3425 Chemical Process Safety (Replaces CHEE2421)	CHEM3210 Functional Materials
CHEE2695 Energy Transfer and Technologies (Replaces CHEE2691)	CHEM3310 Molecular Organic Synthesis
CHEE2825 Chemical Engineering Laboratory (Replaces CHEE2820)	CHEM3410 Energy and Structure
CHEE2935 Resource and Energy Optimisation (Replaces CHEE2931)	CHEM3550 Medicinal and Biological Chemistry
CHEE2945 Particle & Resources Engineering (Replaces CHEE2940)	CHEM3580 Colloids, Interfaces and Soft Matter
CHEM2310 Organic Chemistry	ENVS3001 Integrated Impact Assessment
CHEM2410 Physical Chemistry	ENVS3002 Environmental Management Perspectives
ENVS2001 Environmental Concepts: Energy (Not currently offered)	ENVS3003 Conservation Biology
ENVS2004 Ecology	ENVS3004 Ecotoxicology
ENVS2005 Management of Australian Flora	ENVS3006 Surviving the Anthropocene: Sustainability in the 21st Century
ENVS2006 Ecology and Management of Wildlife	ENVS3007 Environmental Remediation
ENVS2008 The Sustainable Society	ENVS3008 Organisational Placement in the Environmental Sector
ENVS2620 Biosciences for EOHS (Not currently offered)	ENVS3610 Environmental Impact Assessment (Not currently offered)
ENVS2710 Environmental Control Practice (Not currently offered)	ENVS3750 Industrial Ecology for EOHS (Not currently offered)
GEOG2080 Cities and Regions	GEOG3090 Society and Space
GEOG2130 Geographies of Development	GEOG3300 Rethinking Development
GEOS2050 Catchment and Climate	GEOS3280 Global Change and the Rise of Modern Environments (Not currently offered)
GEOS2070 Climatology and Soils (Not currently offered)	GEOS3330 Tectonics (Last offering in 2021)
GEOS2080 Earth Science Field Course	
GEOS2200 Earth's Sedimentary Rocks & Environments (Not currently offered)	

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Directed Courses Removed from the Program in 2021

If you have not already completed these courses prior to 2021 then you choose a different Directed course in the above list:

BIOL2020 Animal Physiology and Development

CHEM2110 Analytical Chemistry

CHEM2210 Inorganic Chemistry

GEOS2170 Optical Mineralogy

GEOS2190 Structural Geology

BIOL3310 Plant Cell & Molecular Biology

BIOL3330 Plant Development and Physiology

CHEM3560 Materials Chemistry: Solids and Semiconductors

CHEM3570 Spectroscopic Characterisation of Compounds

GEOG3240 Globalisation: Cities, Economies

GEOS3110 Igneous Petrology and Crustal Evolution

GEOS3150 Basin Analysis

GEOS3160 Energy Resources

GEOS3170 Resource and Exploration Geology

GEOS3260 Field Course on Carbonate Environments