



UOW
COLLEGE
AUSTRALIA

—
PATHWAYS TO
UNIVERSITY OF
WOLLONGONG

Diploma of Science (3 session)

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Course Outline

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Diploma of Science (3 session) Course Outline

1 Course Description

The UOW College Australia (UOWCA) Diploma of Science provides students with a pathway into the study of sciences at the university level. A university degree in science offers a range of pathways into interesting careers. Students are provided with a range of learning experiences and opportunities in science discipline-based subjects which provide them with the experience of working in University of Wollongong (UOW) science laboratories.

Students in the Diploma of Science will be supported in the introductory phase of this course through subjects specifically designed to prepare them to undertake study in the discipline of science. These subjects assist students to develop approaches to effective learning in the higher education context. In sessions 2 and 3, students are provided with dedicated support tutorials to prepare them for success in their university studies.

The Diploma of Science provides pathways for entry into the second year of a Bachelor of Science degree at UOW, with specified credit of up to 48 credit points for subjects in the compulsory core components of these degrees.

Diploma qualifications are located at level 5 of the Australian Qualifications Framework. The purpose of the Diploma qualification type is to qualify individuals who apply integrated technical and theoretical concepts in a broad range of contexts to undertake advanced skilled or paraprofessional work and as a pathway for further learning.

2 Graduate Qualities

The Diploma of Science (3 session) course is designed to assist students in developing the UOW College Australia Graduate Qualities. It helps students become:

1. **Informed:** Have a basic knowledge of an area of study and understand its issues. Know how to apply this knowledge.
2. **Independent Learners:** Begin to engage with new ideas and ways of thinking and critically analyse issues. Seek to extend knowledge through ongoing enquiry and active learning. Find and evaluate information, using a variety of sources and technologies. Acknowledge the work and ideas of others.
3. **Problem Solvers:** Demonstrate introductory levels of creative, logical and critical thinking skills to respond effectively to problems. Be flexible and thorough.
4. **Effective Communicators:** Articulate and convey ideas effectively using a range of media. Work collaboratively and engage with people in different settings.
5. **Responsible:** Understand how decisions can affect others and make ethically informed choices. Appreciate and respect diversity and act with integrity. Take responsibility for one's own learning and completion of assessment tasks.

3 Course Learning Outcomes

Graduates will be able to:

1. Apply critical thinking, analysing, problem-solving and planning skills appropriate to the study of science.
2. Demonstrate communication skills - oral, written, systems documentation - to convey knowledge and collaborate with others.
3. Utilise information and communication technologies (ICT), including access to and use of data and library resources.
4. Demonstrate an understanding of the body of knowledge underpinning the study of selected core disciplines of science.
5. Articulate the role, relevance and ethical implications of science in society.
6. Recognise and address ongoing learning needs.
7. Apply the academic literacy requirements for successful completion of an undergraduate university course.

4 Course Learning Outcomes Mapped to Graduate Qualities

The table below shows how the graduate qualities are integrated into the course learning outcomes.

Course Learning Outcomes/Graduate Qualities	1. Informed	2. Independent Learners	3. Problem Solvers	4. Effective Communicators	5. Responsible
1. Apply critical thinking, analysing, problem-solving and planning skills appropriate to the study of science.		✓	✓		
2. Demonstrate communication skills - oral, written, systems documentation - to convey knowledge and collaborate with others.				✓	
3. Utilise information and communication technologies (ICT), including access to and use of data and library resources.		✓			
4. Demonstrate an understanding of the body of knowledge underpinning the study of selected core disciplines of science.	✓				
5. Articulate the role, relevance and ethical implications of science in society.	✓			✓	✓
6. Recognise and address ongoing learning needs.		✓			✓
7. Apply the academic literacy requirements for successful completion of an undergraduate university course.	✓	✓		✓	

5 Course Structure and Subjects

2906: DIPLOMA OF SCIENCE - (3 Sessions) (International)			
SESSION 1: UOW College Summer Session			
Subject Code	Subject Name	Credit Points	Contact Hours a Week
DSCI102	Introductory Science Skills	6	4
DSCI103	Chemistry	6	4
DSCI104	Mathematics 1	6	4
WUCT001	Tertiary Academic Skills	6	6
Total Session 1		24	18
SESSION 2: UOW Autumn Session			
Subject Code	Subject Name (UOW Equivalent Subject Code)	Credit Points	Contact Hours a Week
DSCI106* or DSCI107#	Foundation Chemistry: Properties of Matter (CHEM104) or Chemistry 1A: Introductory Physical and General Chemistry (CHEM101)	6	7
DSCI108	Evolution, Biodiversity and Environment (BIOL104)	6	7
DSCI113	Introductory Geospatial Analysis (EESC105)	6	6
DSCI151^	General Mathematics 1A (MATH151)	6	7
Total Session 2		24	27
SESSION 3: UOW Spring Session			
Subject Code	Subject Name (UOW Equivalent Subject Code)	Credit Points	Contact Hours a Week
DSCI105	Planet Earth (EESC101)	6	6
DSCI110* or DSCI111#	Foundation Chemistry: Reactions and Structures (CHEM105) or Chemistry 1B: Structure and Reactivity of Molecules for Life (CHEM102)	6	7 or 8
DSCI112	Molecules, Cells and Organisms (BIOL103)	6	6
DSCI116	Earth's Interconnected Spheres (EESC102)	6	6
Total Session 3		24	25-26

^DSCI151 will be required for all Diploma students, unless Band 4 Mathematics has been achieved in the HSC.

#DSCI107 and DSCI111

- Students who have achieved a result of 65% or better in HSC Chemistry take DSCI107 and DSCI111. DSCI107 is a pre-requisite for DSCI111 (students must pass DSCI107 before they can enrol in DSCI111).

*DSCI106 and DSCI110

- All other students take DSCI106 and DSCI110. DSCI106 is a pre-requisite for DSCI110 (students must pass DSCI106 before they can enrol in DSCI110).

6 Subjects Mapped to Course Learning Outcomes

Subject/Course Learning Outcomes	1. Apply critical thinking, analysing, problem-solving and planning skills appropriate to the study of science.	2. Demonstrate communication skills - oral, written, systems documentation - to convey knowledge and collaborate with others.	3. Utilise information and communication technologies (ICT), including access to and use of data and library resources.	4. Demonstrate an understanding of the body of knowledge underpinning the study of selected core disciplines of science.	5. Articulate the role, relevance and ethical implications of science in society.	6. Recognise and address ongoing learning needs.	7. Apply the academic literacy requirements for successful completion of an undergraduate university course.
DSCI102 Introductory Science Skills	✓	✓	✓	✓	✓	✓	✓
DSCI103 Chemistry	✓	✓	✓	✓		✓	✓
DSCI104 Mathematics 1	✓	✓				✓	✓
DSCI106 Foundation Chemistry: Properties of Matter	✓	✓		✓			✓
DSCI107 Introductory Physical and General Chemistry	✓	✓		✓			✓
DSCI108 Evolution, Biodiversity and Environment	✓	✓		✓	✓	✓	✓
DSCI110 Foundation Chemistry: Reactions and Structures	✓			✓			

Subject/Course Learning Outcomes	1. Apply critical thinking, analysing, problem-solving and planning skills appropriate to the study of science.	2. Demonstrate communication skills - oral, written, systems documentation - to convey knowledge and collaborate with others.	3. Utilise information and communication technologies (ICT), including access to and use of data and library resources.	4. Demonstrate an understanding of the body of knowledge underpinning the study of selected core disciplines of science.	5. Articulate the role, relevance and ethical implications of science in society.	6. Recognise and address ongoing learning needs.	7. Apply the academic literacy requirements for successful completion of an undergraduate university course.
DSCI111 Chemistry 1B: Structure and Reactivity of Molecules for Life	✓	✓		✓			✓
DSCI112 Molecules, Cells and Organisms		✓		✓			✓
DSCI113 Introductory Geospatial Analysis	✓	✓	✓	✓	✓		
DSCI116 Earth's Interconnected Spheres	✓	✓	✓	✓	✓	✓	✓
DSCI151 General Mathematics 1A	✓	✓	✓			✓	
WUCT001 Tertiary Academic Skills		✓	✓			✓	✓

7 Progression Guidelines

Course Progression Requirements

1. To qualify for the award of the Diploma of Science, students must achieve a minimum result of 50% for each subject in the 3 session Diploma.
2. DSCI106 Foundation Chemistry: Properties of Matter is a pre-requisite for DSCI110 Foundation Chemistry: Reactions and Structures. Students cannot enrol in DSCI110 unless they pass DSCI106 with a minimum result of 50%.
3. DSCI107 Chemistry 1A: Introductory Physical and General Chemistry is a pre-requisite for DSCI111 Chemistry 1B: Structure and Reactivity of Molecules for Life. Students cannot enrol in DSCI111 unless they pass DSCI107 with a minimum result of 50%.
4. Students who meet the requirements for the award of the Diploma can progress to the second year of the Bachelor of Science in the Faculty of Science, Medicine and Health with 48 points of UOW credit transfer.
5. There is no UOW credit transfer from the 3 Session Diploma for WUCT001 Tertiary Academic Skills or DSCI102 Introductory Science Skills or DSCI103 Chemistry or DSCI104 Mathematics 1.
6. The Diploma is designed as a pathway into the UOW Bachelor of Science (BS) degree. Students who complete all subjects in the course, with a minimum of 50% for each, will be eligible for admission to the second year of the BS degree with 48 credit points, noting that they may need to take some 100-level subjects to bring them to the required level in designated disciplines. Diploma of Science graduates who meet the performance requirements for entry will be eligible to apply to the Faculty for consideration for entry to a specialised Science degree.
7. Students who successfully complete the Diploma with passes in DSCI106 and DSCI110 and enrol in UOW Bachelor of Science (Chemistry) or Bachelor of Biomedical Technology degrees must complete CHEM106 Foundation Chemistry: Properties and Reactivity of Matter (offered Summer Session, online, 2 week intensive, one exam) as UOW students.
8. Students may exit the Diploma course early and enter the relevant degree with 36 or 42 points of UOW credit transfer ('Early Exit - Incomplete Award'), if they have achieved the following conditions:
 - i. Students must have achieved a minimum final mark of 50% in at least 6 credit-bearing subjects in the Diploma (all subjects except those listed at 9 above); and,
 - ii. Students must be on Active Status at the time they seek Early Exit - Incomplete Award. Students who are not on Active status must successfully complete the Diploma in full to progress to UOW.

Note: Where a student has opted for Early Exit – Incomplete Award, they will not be eligible for the Diploma award until they successfully complete the outstanding equivalent subjects in their UOW degree. Once a student has completed the equivalent subjects at UOW, the student can submit an [application for credit transfer](#) directly to UOW College for the Diploma qualification to be awarded.

8 Entry Requirements / Admissions Guidelines

Entry requirements for this course can be viewed online at:

<https://coursefinder.uow.edu.au/information/index.html?course=diploma-of-science-3-sessions>

9 Assessment

Students are required to complete a number and variety of assessment tasks related to their streams of study.

Each subject has a subject outline that is issued to students. Subject outlines contain an overview of subject objectives, an assessment schedule, a list of learning resources and a weekly topic outline. Subject outlines also contain an explanation of assessment components.

All assessment tasks with a weighting of 10% or greater have marking criteria and an answer/marking guide.

All aspects of assessment are governed by the Assessment Guidelines, which can be viewed at: [Assessment & Examination Guidelines for Students](#) and [Assessment Guidelines](#).

10 Quality Assurance

The College applies formal quality assurance processes to its design of courses, subjects and their assessments. These processes include:

- Clear subject outlines that align with the objectives of the course and support consistent delivery of content;
- Mandatory inclusion of clear and appropriate marking criteria in assessment tasks;
- Moderation of marking of student assessment tasks, ensuring that the assessment criteria have been applied consistently and there is equity across individual markers;
- A regular schedule of audits on student assessment tasks using randomly-selected samples of student work; and
- The use of feedback from students and teachers to inform continuous improvement of curriculum, delivery, policies and procedures.

Details of the College's approach to quality assurance can be viewed at the following link: <https://www.uowcollege.edu.au/about/policies-procedures/index.html>.

11 Subject Descriptions

DSCI102 Introductory Science Skills

Scientific knowledge and an understanding of core scientific principles are the foundations of our modern world, including in fields such as medicine and health, technology and communications, and are the drivers for the accelerating rate of progress and change. This subject will provide students with an introductory understanding and appreciation of the role that science has played in the development of society and possible future developments, the core scientific principles that have enabled such progress, and basic knowledge content in the areas of biology, chemistry and physics. Students will also develop primary research skills by designing and conducting a study on a chosen issue, which they will present as a complete scientific report at the end of session.

DSCI103 Chemistry

This subject introduces students to fundamental principles of chemistry and provides practical experience with basic chemical apparatus and techniques. This subject is directed towards students with little or no background in chemistry, and covers aspects of introductory physical and inorganic chemistry.

DSCI104 Mathematics 1

This subject provides a review of basic arithmetic, algebraic concepts, functions, probability, statistics and an introduction to trigonometry and trigonometric functions. The subject develops analytical problem-solving skills and provides opportunity for students to apply mathematical methods through problem solving.

DSCI105 Planet Earth

How does the solid planet Earth function and of what does it consist? This subject provides an introduction to Earth science by considering topics such as geological time, the solar system, the interior of Earth, tectonics and structural geology, crystals, minerals, volcanoes and volcanic processes, and characteristics of igneous, sedimentary and metamorphic rocks.

DSCI106 Foundation Chemistry: Properties of Matter

This subject provides an introduction to core chemistry knowledge and skills as required for studies of biology and applied sciences. The subject develops the use of chemistry language, symbols and other representations, and the quantitative (numeracy, mathematical) skills required. The concepts include matter, introduction to atoms, ions and molecules, chemical nomenclature and quantities in chemistry; molecular scale concepts, electrons and the chemical bond, molecular shape, intermolecular forces; matter macroscale, the nature and properties of materials resulting from their molecular level character, with specific biological / polymeric / new materials-based examples. Concepts about changing matter follow, considering the energetics and rate of chemical change. The topics are presented in

contemporary contexts exploring chemical phenomena and specifically designed for students without senior high school chemistry.

DSCI107 Chemistry 1A: Introductory Physical and General Chemistry

This subject provides core chemical concepts, reinforcing and building on senior chemistry, and providing the basis of further studies in chemistry. Concepts include the fundamentals of quantity, mole and stoichiometric calculations, the properties and behaviour of matter on the molecular scale based on electron configuration, periodicity, chemical bonding and molecular shape. The subject continues with concepts concerning matter on the macroscale: gases, liquids, solids and solutions with properties determined by the molecular scale. Principles of thermodynamics, equilibrium and kinetics are used to describe, interpret and understand chemical and physical change. The topics are presented in contemporary contexts, exploring chemical phenomena relevant to a suite of applied disciplines as well as chemistry.

DSCI108 Evolution, Biodiversity and Environment

This subject aims to provide students with a comprehensive introduction to whole organism biology, from species to populations, communities and ecosystems. Specifically, the subject explores the identity, anatomical and life-history characteristics of the main groups of organisms, their patterns of diversity across Earth, the processes of evolution and speciation, ecology and conservation biology. In addition, through a series of practical and tutorial classes, the subject equips students with an understanding of the scientific process, ways in which experiments are designed and implemented, the processes of data collection, analysis and hypothesis testing, and scientific writing.

DSCI110 Foundation Chemistry: Reactions and Structures

This subject follows on from essential chemical principles studied in DSCI106/CHEM104 and provides a suite of compound groups and reaction types across inorganic and organic chemistry, with application in contemporary contexts suited to the study of Biology and the applied sciences. The subject begins by applying the equilibrium concept in the context of dissolution / precipitation, acid base and redox reactions. The chemistry of transition metal complexes, especially as applied in biochemical and catalytic systems, is studied. The chemistry of nonmetals, P, N, and S is studied, highlighting biological environmental and industrial contexts. Organic chemistry is introduced via hydrocarbon structures and then functional groups and classes of reactions pertinent to biological systems are studied. The application of structure concepts and reaction types is used to understand the properties of natural and synthetic polymers. The topics are presented in contemporary contexts, exploring structures and reactions. This subject is specifically designed for students without senior high school chemistry.

DSCI111 Chemistry 1B: Structure and Reactivity of Molecules for Life

This subject follows on from DSCI107/CHEM101, using concepts and principles concerning the structure of matter and the nature of chemical change, applied first in aqueous reactions of acid base, and redox systems. A suite of inorganic compounds and reaction types including periodicity is then introduced, covering transition metal complexes and inorganic non-metals, of S, P, N relevant to biological and environmental systems. Organic chemistry is introduced with a detailed look at structure and isomerism, leading to a treatment of organic functional groups and reactions based on mechanistic descriptions of the reaction systems. The mechanistic approach considers reactivity and stability of chemical species and uses thermodynamic, kinetic and equilibrium considerations to describe and analyse reactions. The application of structure concepts and reaction types is used to understand the properties of natural and synthetic polymers.

DSCI112 Molecules, Cells and Organisms

This subject involves the study of molecules, cell and organisms fundamental to biology. It provides an introduction to the topic areas of cell biology, biochemistry, biotechnology, genetics, microbiology and immunology. During this subject, students will look closely at the links between structure and function in cells and important biological molecules, while investigating cellular division and mechanisms to control the cell cycle and prevent cancer. Students will hear about techniques in genetic engineering and breakthroughs in biotechnology. They will learn about different microorganisms and their role in human, animal and/or plant health and explore the physiology of the immune system. Through engagement in group research projects, students will develop skills in effective research and communication, teamwork, self-reflection and peer assessment while developing digital literacy skills in presenting their research through PowerPoint (or similar tools) and generation of an electronic portfolio.

DSCI113 Introductory Geospatial Analysis

This subject provides a comprehensive introduction to the theory and practice of Geographic Information Systems (GIS) and geospatial analysis, and aims to equip students with core skills that will enable solving simple geospatial problems. The subject comprises two parts. Part one follows a classical lecture/practical format, where students learn the foundations of geospatial analysis. Part two follows a problem-based approach, enabling students to apply the core geo-analytical skills to solving a simple real-world practical problem by working in groups and using industry-standard tools and technologies.

DSCI116 Earth's Interconnected Spheres

This subject examines the processes that occur within, and the interactions and feedbacks that occur between the various components – or spheres – of the Earth system. There is a focus on Earth's landforms as the product of tectonics, climate, and erosion; topics also include: the composition and behaviour of the atmosphere; global weather and climatic patterns; the character of the oceans and their interaction with the landmasses; and the role of humans in shaping the Earth system. Laboratory classes focus on developing and applying statistical data analysis, and field surveying and mapping skills to a variety of geographical contexts.

DSCI151 General Mathematics 1A

The purpose of this subject is for students to improve their mathematical skills. It introduces topics in algebra, functions, and trigonometric, graphing, data modelling and foundation calculus with a view to applications in Science.

WUCT001 Tertiary Academic Skills

This subject assists students whose first language is not English to develop the subject-related academic literacy and language skills which are inherent requirements in the course materials and assessments of the other Diploma subjects. An analysis of subject-specific literacy and language demands will ensure that support is connected to students' academic needs. Teaching strategies and resources will be adjusted on a session-by-session basis to ensure that relevant skills are addressed. Aural, visual and written stimulus material will be selected from other Diploma subjects and used for a variety of academic purposes. Class sizes will be smaller than the normal tutorial classes, in order to provide tailored support for learning in other Diploma subjects. The conceptual framework for this subject based on the essential knowledge and language skills required to successfully engage in the academic research process. Each stage in this process provides opportunities to develop literacy and language skills, from everyday communication to the substantially more difficult communication demands required in academic contexts.

12 Version Control Table

Version Control	Date Effective	Approved By	Amendment
1	12/09/2019	UOWCA Academic Board	Initial release - 2020 delivery
2	24/02/2020	UOWCA General Manager	Correction of typographical errors Addition of CRICOS course code
3	17/12/2020	UOWCA Academic Board	Amendment of subjects in course to reflect faculty delivery arrangements
4	09/09/2021	UOWCA General Manager	Amend naming convention. Update progression rules.