UOW COLLEGE AUSTRALIA

PATHWAYS TO UNIVERSITY OF WOLLONGONG

Undergraduate Certificate in Science

Course Code: 3146 Undergraduate Certificate in Science

Year of issue: 2025

Course Outline

UOW College is a registered business name of UOWC Ltd. **ABN:** 14 105 312 329. **CRICOS:** 02723D.

Contents

Undergraduate Certificate in Science Course Outline

1 Course Description

The UOW College Australia (UOWCA) Undergraduate Certificate in Science provides students with a pathway into the study of sciences at the university level. Students are provided with a range of learning experiences and opportunities in discipline-based subjects including biology, chemistry, and earth sciences. Students are also provided with dedicated support tutorials to prepare them for success in their university studies.

The Undergraduate Certificate in Science provides pathways for entry into the UOWCA Diploma of Science with 24 points of credit.

Undergraduate Certificates are higher education qualifications of six months duration that may be used to articulate with existing qualifications at AQF levels 5, 6, or 7. They qualify individuals with knowledge and skills for further study, professional upskilling, employment and participation in lifelong learning.

2 Graduate Qualities

The Undergraduate Certificate in Science 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. Demonstrate a broad and coherent body of knowledge required to upskill professionally.
2. Demonstrate knowledge and skills sufficient to sustain lifelong learning in higher education and vocational settings.
3. Apply knowledge in new or existing disciplines or professional areas.
4. Demonstrate an appropriate depth of integrated knowledge of the specialisation area.

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. Demonstrate a broad and coherent body of knowledge required to upskill professionally.	✓			✓	
2. Demonstrate knowledge and skills sufficient to sustain lifelong learning in higher education and vocational settings.	✓	✓			✓
3. Apply knowledge in new or existing disciplines or professional areas.	✓	✓	✓		
4. Demonstrate an appropriate depth of integrated knowledge of the specialisation area.	✓			✓	

5 Course Structure and Subjects

3146: Undergraduate Certificate in Science			
SESSION 1^			
Subject Code	**Subject Name *(UOW Equivalent Subject Code)***	**Credit Points**	**Contact Hours a Week**
DSCI105	Planet Earth *(EESC101)*	6	6
DSCI106#	Foundation Chemistry: Properties of Matter *(CHEM104)*	6	7
DSCI108	Evolution, Biodiversity and Environment *(BIOL104)*	6	7
DSCI109	Global Challenges in Science *(SCII101)*	6	6
Session Total		**24**	**26**
SESSION 2^			
Subject Code	**Subject Name *(UOW Equivalent Subject Code)***	**Credit Points**	**Contact Hours a Week**
DSCI110#	Foundation Chemistry: Reactions and Structures *(CHEM105)*	6	7
DSCI112	Molecules, Cells and Organisms *(BIOL103)*	6	6
DSCI116	Earth's Interconnected Spheres *(EESC102)*	6	6
DSCI125	Functional Biology of Animals and Plants *(BIOL105)*	6	7
Session Total		**24**	**26**

^ Session 1 and Session 2 subjects are not required to be studied in this sequence and can be taken in any order as determined by delivery availability and any pre-requisite rules in place.

#DSCI106 is a pre-requisite for DSCI110. Students must achieve a minimum result of 50% in DSCI106 before they are eligible to enrol in DSCI110.

Expected Course Workload

As a guide, the workload for your course is determined by the number of subjects you take each session. Attempting four subjects in a standard session is considered to be a fulltime load i.e. equivalent to working fulltime (35-45hrs a week).

Each subject in this course has designated contact hours where you are required to attend classes including lectures, tutorials, workshops or other structured learning experiences.

To be successful in this course you are also required to undertake independent learning activities outside of your scheduled classes, this includes:

- Preparing for classes: homework, readings and reviewing learning materials.
- Independently researching and/or practicing knowledge and skills.
- Completing all assessment tasks and studying for examinations.
- Attending learning support services.

6 Subjects Mapped to Course Learning Outcomes

Subject/Course Learning Outcomes	1. Demonstrate a broad and coherent body of knowledge required to upskill professionally.	2. Demonstrate knowledge and skills sufficient to sustain lifelong learning in higher education and vocational settings.	3. Apply knowledge in new or existing disciplines or professional areas.	4. Demonstrate an appropriate depth of knowledge of the specialisation area.
DSCI105 Planet Earth	✓	✓	✓	✓
DSCI106 Foundation Chemistry: Properties of Matter	✓	✓	✓	✓
DSCI107 Chemistry 1A: Introductory Physical and General Chemistry	✓	✓	✓	✓
DSCI108 Evolution, Biodiversity and Environment	✓	✓	✓	✓
DSCI109 Global Challenges in Science	✓	✓	✓	✓
DSCI110 Foundation Chemistry: Reactions and Structures	✓	✓	✓	✓
DSCI112 Molecules, Cells and Organisms	✓	✓	✓	✓
DSCI116 Earth's Interconnected Spheres	✓	✓	✓	✓
DSCI125 Functional Biology of Animals and Plants	✓	✓	✓	✓

7 Progression Guidelines

Course Progression Requirements

1. To qualify for the award of the Undergraduate Certificate in Science, students must achieve a minimum result of 50% in any four subjects to achieve a total of 24 credit points, subject to the course rules.
2. Students who meet the requirements for the award of the Undergraduate Certificate can progress to the Diploma of Science with 24 points of credit.

8 Entry Requirements / Admissions Guidelines

Entry requirements for this course can be viewed online at:

https://www.uow.edu.au/study/

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 Policy, Procedures and Guidelines, which can be viewed at: https://www.uowcollege.edu.au/support-resources/policies-procedures/

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.

11 Subject Descriptions

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.

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.

DSCI109 Global Challenges in Science

Every major challenge of modern life, such as ensuring energy, food, health and water security in a sustainable world has complex science and technology underpinnings that span beyond geographical barriers whilst being dependent upon often complex political and financial structures. Students in Global Challenges in Science will work within interdisciplinary teams to investigate projects related to such modern challenges. Student learning in this subject is facilitated through engaging online material, in combination with face-to-face lectures and workshop classes.

This subject will bring all students from the SMAH Bachelor of Science program together in one subject. This subject will be utilised to provide course advice and guidance to help students map their program of study and navigate their transition

to university. The projects undertaken in this subject will foster a sense of community amongst science students and have students explore different aspects of science and how science contributes to society.

You will explore the method of science and how science informs debate and decision-making on public issues whilst also understanding the responsibilities of the public in having scientific understanding and how you can contribute to a better future using your scientific knowledge.

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.

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.

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.

DSCI125 Functional Biology of Animals and Plants

Students will investigate the form and function of living things with a comparative approach that recognises evolutionary origins and how this affects the way they overcome challenges to their day-to-day existence. Body plans of plants and animals. How plants and animals obtain the energy and nutrients they need for growth. Reproduction in plants and animals. Sensory systems in plants and animals. Parasitic plants & animals. How do plants and animals interact and respond to their environment? Animal behaviour. Please note that this subject involves animal dissections. While direct participation is not mandatory, all students will be examined on the material.

12 Version Control Table

Version Control	Date Effective	Approved By	Amendment
2023.01	01/12/2023	UOWCA Education Committee	New release 2023
2024_1.0	01/12/2023	No Change	New release 2024
2024_1.1	25/06/2024	Program Manager Academic	Update to the URL links
2025_1.0	03/01/2025	Program Manager Academic	New release 2025