



UOW
COLLEGE
AUSTRALIA

—
PATHWAYS TO
UNIVERSITY OF
WOLLONGONG

Undergraduate Certificate in Medical and Health Sciences

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Course Outline

Contents

1	Course Description.....	1
2	Graduate Qualities.....	2
3	Course Learning Outcomes.....	2
4	Course Learning Outcomes Mapped to Graduate Qualities.....	3
5	Course Structure and Subjects.....	3
6	Subjects Mapped to Course Learning Outcomes.....	4
7	Progression Guidelines	5
8	Entry Requirements / Admissions Guidelines	6
9	Assessment.....	6
10	Quality Assurance	6
11	Subject Descriptions	7
12	Version Control Table	11

Undergraduate Certificate in Medical and Health Sciences Course Outline

1 Course Description

The UOW College Australia (UOWCA) Undergraduate Certificate in Medical and Health Sciences offers a comprehensive foundation in chemical and biological sciences where students gain an understanding of applied sciences, including the anatomical, molecular and physiological processes of human health and function. Students are provided with a range of learning experiences and opportunities in science discipline-based subjects which provide students with the experience of working in University of Wollongong (UOW) science laboratories. Students are provided with dedicated support tutorials to prepare them for success in their university studies.

The UOWCA Undergraduate Certificate in Medical and Health Sciences is nested within the UOWCA Diploma of Medical and Health Sciences, providing students with 24 credit points towards the 48 credit point Diploma award.

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 Medical and Health Sciences 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 by Campus

To be eligible for the award of the Undergraduate Certificate, students will be required to successfully complete four of the subjects prescribed in the tables below.

UOW Autumn Session Dates			
Subject Code	Subject Name (UOW Equivalent Subject Code)	Credit Points	Hours a Week
DMHS100 [^]	Human Structure and Function (MEDI100)	6	4
DMHS150 [^]	Fundamental Concepts in Nutrition (MEDI150)	6	4
DMHS160	Scientific Literacy (MEDI160)	6	4
DSCI107	Chemistry 1A: Introductory Physical and General Chemistry (CHEM101)	6	7
DSCI106	OR Foundation Chemistry: Properties of Matter (CHEM104)		
Total Summer Session		24	19

UOW Spring Session Dates			
Subject Code	Subject Name (UOW Equivalent Subject Code)	Credit Points	Hours a Week
DMHS112	Introduction to Anatomy and Physiology II (MEDI112)	6	5
DMHS151 [^]	Healthy Ageing (MEDI151)	6	4
DSCI112	Molecules, Cells and Organisms (BIOL103)	6	6
DMHS200*	Living in a Molecular World (CHEM200)	6	4
DSCI111#	OR Chemistry 1B: Structure and Reactivity of Molecules for Life (CHEM102)		7
DSCI110#	OR Foundation Chemistry: Reactions and Structures (CHEM105)		8
Total Spring Session		24	19-23

DSCI107 is a pre requisite for DSCI111 (students must pass DSCI107 before they can enrol in DSCI111), and is available only to students who have achieved a result of 65% or better in HSC Chemistry. DSCI106 is a pre requisite for DSCI110 (students must pass DSCI106 before they can enrol in DSCI110).

*DSCI106 and DSCI107 are delivered only during Autumn session. This means that students completing the full course in Spring session will not be able to complete the required pre-requisite subjects for DSCI110 and DSCI111, and are required to complete DMHS200 Living in a Molecular World.

[^]DMHS100 Human Structure and Function and DMHS150 Fundamental Concepts in Food and Nutrition are pre-requisites for DMHS151 Healthy Ageing. Students cannot enrol in DMHS151 unless they pass DMHS100 and DMHS150 with a minimum result of 50%.

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 integrated knowledge of the specialisation area.
DMHS100 Human Structure and Function	✓	✓	✓	✓
DMHS112 Introduction to Anatomy and Physiology II	✓	✓	✓	✓
DMHS150 Fundamental Concepts in Nutrition	✓	✓	✓	✓
DMHS151 Healthy Ageing	✓	✓	✓	✓
DMHS160 Scientific Literacy	✓	✓	✓	✓
DMHS200 Living in a Molecular World	✓	✓	✓	✓
DSCI106 Foundation Chemistry: Properties of Matter	✓	✓	✓	✓
DSCI107 Chemistry 1A: Introductory Physical and General Chemistry	✓	✓	✓	✓
DSCI110 Foundation Chemistry: Reactions and Structures	✓	✓	✓	✓
DSCI111 Chemistry 1B: Structure and Reactivity of Molecules for Life	✓	✓	✓	✓
DSCI112 Molecules, Cells and Organisms	✓	✓	✓	✓

7 Progression Guidelines

Course Progression Requirements

1. To qualify for the award of the Undergraduate Certificate in Medical and Health Sciences, students must achieve a minimum result of 50% for each subject.
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 complete any four subjects in the Undergraduate Certificate in Medical and Health Sciences course with a minimum Pass grade (50%) result for each subject will be eligible for admission to the Diploma of Medical and Health Sciences with 24 points of credit. The Diploma of Medical and Health Sciences articulates into the following courses at the University of Wollongong with up to 48 credit points of advanced standing:
 - Bachelor of Medical and Health Sciences
 - Bachelor of Nutrition Science
 - Bachelor of Exercise Science.

8 Entry Requirements / Admissions Guidelines

Entry requirements for this course can be viewed online at:

<https://coursefinder.uow.edu.au/information/index.html?course=undergraduate-medical-health>

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 a broad 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 contain clear marking criteria and an answer/marking guide.

All aspects of assessment are governed by the Assessment Policy which can be viewed in detail at: <http://www.uowcollege.edu.au/policies>.

10 Quality Assurance

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

- Standardisation of course content and delivery in accordance with Subject Outlines;
- Mandatory inclusion of clear and appropriate marking criteria in assessment tasks;
- Moderation of marking of student assessment tasks to ensure that the assessment criteria have been applied consistently, and to address differences in judgement between 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

DMHS100 Human Structure and Function

This subject explores basic concepts of both structure (anatomy) and function (physiology) of the human body. The subject covers basic principles of anatomy and physiology in the areas of skeletal, joint, muscular, nervous, cardiovascular and respiratory systems. Teaching and learning will take place in lectures, laboratory (both actual and virtual) and tutorial settings using state of the art resources and online support.

DMHS112 Introduction to Anatomy and Physiology II

This subject provides a fundamental scientific basis for students undertaking study areas such as medical and health science, medicine, physical education, exercise science and rehabilitation, and radiation physics. In this subject, you will be exposed to a broad overview of the anatomy and physiology of the human body from both a “systemic” and “regional” approach. That is, the human body will be divided into its basic systems (e.g. sensory and gastrointestinal) and each system will then be studied as an integrated whole alongside other systems (regional). MED112 will introduce and extend knowledge of cell structure and function, the autonomic nervous system and special senses, the urinary, reproductive and gastrointestinal systems, lymphatics, endocrine function, metabolism and the immune system. The lecture series and online practical activities will provide you with a basic understanding of how each system functions from an anatomical and physiological perspective. It is important to understand that no single system functions in isolation. The lecture and practical activities compliment integrated learning of key systems in the human body from a functional and structural perspective. Please note that Introduction to Anatomy and Physiology II is a subject that will require consistent study throughout the semester.

DMHS150 Fundamental Concepts in Nutrition

This subject incorporates an overview of fundamental concepts in food and nutrition, as they relate to human health. This subject introduces students to the role of nutrition for health, including key components which may constitute a healthy diet, as well as methods to evaluate dietary intakes. Students will discuss the role of factors which may influence intake including interaction of biological, lifestyle and sociocultural aspects of human behaviour; changes in the nature of the food system; role of government and professional groups; and consumer interest.

DMHS151 Healthy Ageing

This subject examines fundamental principles of human movement, considers nutritional demands and exercise responses to encourage a healthy lifestyle and highlights common issues and chronic conditions that can compromise health throughout the lifespan.

DMHS160 Scientific Literacy

Scientific Literacy will introduce students to concepts and skills that are required to successfully undertake science-related undergraduate studies. The development of scientific literacy in students will also provide a foundation that will allow students to make use of scientific knowledge in real-world situations. Students in this subject will develop skills in: - Basic statistical analyses - Data presentation and interpretation - Oral and written communication especially in the context of scientific information - Searching scientific databases and retrieving various types of information from a variety of scientific sources - Evaluating the reliability of a source - Critical analysis of primary literature - Collaborative work - Peer assessment. Students will also develop a general understanding of research design and how it impacts scientific conclusions.

DMHS200 Living in a Molecular World

This subject will be delivered primarily via web-based content, and through participation of students in group assessment and laboratory activities. The purpose of the subject is to provide students with or without a background in science, with the opportunity to learn about the chemicals present in everyday products and engage with contemporary scientific and environmental issues. All laboratory work will be undertaken in state-of-the-art laboratories in the new Sciences Teaching Facility. Students will be supported in their learning activities by a comprehensive eLearning (Moodle) site. This will enable students to learn about how chemical compounds found in and around the home work, as well as about their impacts upon the environment and society. Students who complete this subject will be better prepared to engage with contemporary scientific issues, such as the spread of multi-drug resistant bacteria, and use of performance enhancing supplements by athletes.

DSCI106 Foundation Chemistry: Properties of Matter

The subject provides an introduction to core chemistry knowledge and skills as required for studies of biology and applied sciences. The subject incorporates explicit development of 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

The 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 presented in contemporary contexts exploring chemical phenomena relevant to a suite of applied disciplines as well as chemistry.

DSCI110 Foundation Chemistry: Reactions and Structures

The subject follows on from essential chemical principles studied in CHEM104 and provides a suite of compound groups and reactions 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 highlighting biological environmental and industrial contexts is studied. 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 and specifically designed for students without senior high school chemistry.

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

The subject follows on from 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 reactions 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 specifically 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. For the detailed subject content, see subject content section within the CHEM102 subject handbook, and this content listing is also available on the subject Moodle site.

DSCI112 Molecules, Cells and Organisms

BIOL103 is the study of molecules, cell and organisms fundamental to biology. This subject provides an introduction to the topic areas of cell biology, biochemistry, biotechnology, genetics, microbiology and immunology. During this subject you will look closely at the links between structure and function in cells and important biological molecules whilst investigating cellular division and mechanisms to control the cell cycle and prevent cancer. You will hear about techniques in genetic engineering and break throughs in biotechnology. You 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 you will develop skills in effective research and communication, teamwork, self-reflection and peer assessment whilst developing your digital literacy skills in presenting your research through PowerPoint (or similar tools) and generation of an electronic Portfolio.

12 Version Control Table

Version Control	Date Effective	Approved By	Amendment
1	17/12/2020	UOWCA Academic Board	Initial release – 2021 delivery