



University Foundation Studies

NATS0016

**SCIENCE FOR HEALTH
PROFESSIONALS**

2023 TERM 2

SUBJECT OUTLINE

Last amended:	May 2023
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Subject name	Science for Health Professionals
Subject number	NATS0016
Coordinator	Anne Bertoldo
Session	2023.2
Handbook summary	The depth of knowledge and practical skills required by health professionals in the 21st century is very different to that which was required in the past. Medical treatment of illness and disease has become increasingly technical and health professionals are expected to work in partnership to determine patient care. In order to achieve this, today's health professional must have a basic understanding of the fundamental scientific principles behind health and disease. Increasingly, modern health science is concerned with maintaining health as a way of preventing disease and this is achieved through a holistic approach to the human condition. This subject is an introduction to the basic concepts in human body systems, health and disease, that are required in order to commence any tertiary health science course.
Credit point value	10
Prerequisite/s	N/A
Subject incompatible with and not to be counted for credit with	N/A
Subject level	Level Z — Non-award subject
Attendance requirements	Students are expected to attend at least 80% of classes. Educational research consistently demonstrates that this attendance level is associated with a high likelihood of achieving a passing grade. Students will be required to complete a Laboratory Induction.
Enrolment restrictions	N/A
Learning outcomes	On successful completion of this subject, students should be able to: <ol style="list-style-type: none"> 1. interpret and apply a wide range of biological and scientific terms describing the structure, function and location of human body systems 2. interpret and apply information about the interdependence of human body systems and their components 3. interpret and apply and/or implement information related to health and safety 4. describe in basic terms the nature of genes and inheritance 5. describe factors that contribute to healthy functioning of the body, and 6. critically evaluate health-related information and evidence.

Subject content

In this subject, students will learn about:

Topic 1: Basic scientific concepts for health professionals

1. Atoms and Molecules
2. Liquids and Solutions
3. Acids, Bases, Salts and Buffers
4. Gases—Pressure, Volume and Temperature
5. Energy, Reactions and ATP

Topic 2: Cell structure and function

1. Prokaryotic and eukaryotic cells
2. Eukaryotic cell organelles— structure and function

Topic 3: Introduction to body systems

1. Overview of human body systems
2. Cardiovascular and respiratory systems
3. Musculo-skeletal system
4. Endocrine system
5. Digestive system
6. Integumentary system
7. Lymphatic system
8. Nervous system, including sensory systems (eye and ear)
9. Special senses (vision, hearing, smell, taste, equilibrium)
10. Immune system
11. Reproductive system

Topic 4: Reproduction and genetics

1. Cell division
2. Introduction to DNA, genes and proteins
3. Simple genetics in health and disease

Topic 5: Homeostasis—interdependence of body systems

1. Maintaining body temperature
2. Maintaining fluid and electrolyte balance
3. Maintaining blood pressure

Topic 6: Health and disease

1. Nutrition
2. Physical and mental activity
3. Infectious disease and protection from infection
4. Vaccination and immunisation

Topic 7: Tools of diagnosis

1. Diagnostic testing.

X-rays, ultrasound, CT scans and MRIs, radio/chemotherapies

Mode of delivery

This subject consists of six hours of classes each week as well as online activities via vUWS. This should be supplemented by student reading, work on assessment tasks and library/internet research. This independent study is

expected to make up an additional four hours per week. For a 10-credit point subject, it is expected that students will do a total of 10 hours per week of study for the subject.

Online learning requirements

Essential requirements

Essential texts

Marieb, E. (2012). *Essentials of human anatomy and physiology* (10th ed.). San Francisco: Benjamin Cummings.

The College (2019). *Science for Health Professionals student workbook*. Sydney: Western Sydney University The College.

The College (2019). *Science for Health Professionals student laboratory workbook*. Sydney: Western Sydney University The College.

Essential equipment

- Closed shoes
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ASSESSMENT ITEMS AND WEIGHTING

Assessment for this subject will be based on the following components:

Task	Weighting	Learning outcomes assessed	Mandatory task
1. Log/workbook (1 hour per week)	20%	1, 2, 4, 5, 6	No
2. Short-answer test: interpreting health-related data (1 hour)	20%	1, 2, 4, 5, 6	No
3. Quiz: body systems (45 minutes, online)	15%	1, 2, 4, 5	No
4. Quiz: OH&S (15 minutes, online)	5%	3	No
5. End-of-term examination (2 hours)	40%	1–6	No
TOTAL	100%		

All marks will be determined in accordance with the [Assessment Policy](#). You are strongly encouraged to attempt/submit all assessment tasks, even if they are not mandatory.

Students must achieve a final assessment grade greater than or equal to 50% to pass this subject.

FIRST FORMAL ASSESSMENT TASK AND INTERVENTION PROCEDURE

If you do not attempt/submit the first formal assessment task in a subject, you will be required to follow an Intervention Procedure to avoid receiving either a Fail Non-Submission (FNS) grade or a Fail grade. Any subsequent failure to attempt/submit the first formal assessment task may result in:

- an FNS grade for the subject — if the task is mandatory
- a Fail grade for the assessment — if the task is not mandatory, and you do not reach an overall passing grade of 50

You must achieve a mark of 30% or above (an E grade or higher) for this subject to contribute to your GPA.

LABORATORY INDUCTION

Science, Engineering, Construction Management and Health Science students must complete a Laboratory Induction each term.

This subject will require you to complete practical activities in the Science Laboratory in Building U22, Nirimba campus. It is the responsibility of the individual student to complete the Laboratory Induction and pass the quiz before the first practical takes place. Only students who complete their Laboratory Inductions may complete the practical activities. Any student who misses a practical activity will receive a mark of zero for that activity.

Before you can participate in the practical activities you must complete an online Laboratory Induction. The two-hour practical will take place in Week 11.

The Laboratory Induction video is available on vUWS, in The College Laboratory site.

Students are required to view the video, complete the 13-question quiz and get all of the questions correct by 10.00 pm before census date.