

WESTERN SYDNEY
UNIVERSITY



The College

UNIVERSITY FOUNDATION STUDIES

FOUNDATIONS OF SCIENCE

900053

2020



UNIT OUTLINE

Last amended:	February 2020
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Unit name	Foundations of Science
Unit number	900053
Coordinator	Phillip Newman
Session	2020.1
Handbook summary	<p>This unit aims to provide students with sufficient knowledge of scientific facts and theories, as well as science vocabulary as an important part of English language development. An emphasis on developing vocabulary is fundamental to gaining knowledge and understanding the process of scientific inquiry — collecting, analysing, organising and communicating information, as well as solving problems, particularly when related to using mathematical ideas and techniques. Students who are learning to understand, speak, read and write English at the same time, also need to gain knowledge in the context of science. Therefore, the academic content of Foundations of Science is attained while developing a science vocabulary. The general outcomes for this unit are organised through activities that include four language domains: listening, speaking, reading and writing. These activities will provide good opportunities for better comprehension of science content. All major areas of science (physics, chemistry and biology) are represented within the unit and presented in context within an integrated framework.</p>
Credit point value	10
Prerequisite/s	
Corequisite/s	
Assumed knowledge	
Unit level	Foundation
Attendance requirements	<p>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.</p>
Enrolment restrictions	
Learning outcomes	<p>On successful completion of this unit, students should be able to:</p> <ol style="list-style-type: none">1. recognise, recall and display an understanding of specific scientific facts, terminology, principles, concepts and practical techniques2. display an understanding of the benefits and drawbacks of applications of science3. represent scientific information appropriately as diagrams, graphs, tables, reports and equations4. describe, explain and interpret phenomena and ideas in terms of scientific principles

5. carry out relevant calculations, and
6. interpret data to draw conclusions which are consistent with the evidence, recognising patterns and relationships where they exist.

Unit content	<p>In this unit students will learn about:</p> <ul style="list-style-type: none"> • the nature of science <ul style="list-style-type: none"> – observations – physical quantities and units – international system of units and measurement – graphs • force and motion <ul style="list-style-type: none"> – motion graphs – accelerated motion – free-fall motion – forces – weight – friction – Newton's laws • elements, compounds and mixtures <ul style="list-style-type: none"> – understanding of chemistry – pure and impure substances – properties – examples of elements – mixtures and compounds – particles in solids, liquids and gases • atomic structure and the periodic table <ul style="list-style-type: none"> – current atomic theory – subatomic particles and arrangement – atomic structure and position on periodic table – metals and non-metals • the chemical reaction <ul style="list-style-type: none"> – physical and chemical changes – evidence – ionic and covalent bonds – common reactions – word equations – formula equations (balanced only) – common compounds and properties • cell theory <ul style="list-style-type: none"> – characteristics and requirements of living things – cell theory • body systems <ul style="list-style-type: none"> – major organ systems – organs and functions – diseases – causes and cures.
Mode of delivery	<p>This unit is taught on a face-to-face basis with six hours of lecture/tutorials per week. In addition, students will be required to access vUWS regularly, in order to check for any announcements about the unit that may be posted there.</p>
Online learning requirements	<p>None</p>

Essential requirements**Essential text**

- Nil

Further resources

- Pople, S & Whitehead, P 1996, *Coordinated science: chemistry*, Oxford University Press, Melbourne.
- Pople, S & Whitehead, P 1996, *Coordinated science: physics*, Oxford University Press, Melbourne.
- The College 2019, *Foundations of science student workbook*, Western Sydney University The College, Sydney.

Essential equipment

- Calculator

ASSESSMENT ITEMS AND WEIGHTING

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

Task	Weighting	Learning outcomes assessed	Mandatory task
1. Physics assignment	20%	1–6	Yes
2. Chemistry test	20%	1, 3, 4, 5, 6	Yes
3. Biology test	20%	1, 3, 4, 6	Yes
4. Final examination: All unit topics	40%	1–6	Yes
Total	100%		

For details of assessment due dates, please refer to the learning guide for this unit.

All marks will be determined in accordance with The College [Assessment Policy](#).

All assessment tasks are mandatory unless otherwise specified. Should a student fail to attempt/submit the first formal assessment task in a unit, they will be deemed to be at risk and will need to follow an intervention plan in order not to receive a Fail Non-Submission (FNS) grade. However, failure to attempt/submit all other mandatory assessment tasks will result in an immediate FNS grade for the unit.

In order to pass this unit, students must:

- gain an overall mark of at least 50%
- submit/complete all required items of assessment and activities, and
- keep a copy of all work submitted.