

## Curriculum Content

### Semester 1 Units

#### Biology

##### **B1. Characteristics of living organisms\***

##### **B2. Cells\***

- 2.1 Cell structure
- 2.2 Movement in and out of cells

##### **B3. Biological molecules**

##### **B4. Enzymes**

##### **B5. Plant nutrition**

##### **B6. Animal nutrition\***

- 6.1 Diet
- 6.2 Alimentary canal
- 6.3 Digestion

##### **B7. Transport\***

- 7.1 Transport in plants
- 7.2 Transport in mammals

##### **B8. Gas exchange and respiration\***

- 8.1 Gas exchange
- 8.2 Respiration

##### **B9. Coordination and response\***

- 9.1 Hormones in humans
- 9.2 Tropic responses

##### **B10. Reproduction\***

- 10.1 Asexual and sexual reproduction
- 10.2 Sexual reproduction in plants
- 10.3 Sexual reproduction in humans

##### **B11. Organisms and their environment\***

##### **B12. Human influence on ecosystems\***

AC Transmission of heritable characteristics from one generation to the next involves DNA and genes

AC The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence

#### Physics

##### **P1. Motion\***

- 1.1 Length and time
- 1.2 Motion
- 1.3 Mass and weight
- 1.4 Density
- 1.5 Effects of forces
- 1.6 Pressure

##### **P2. Work, energy and power\***

- 2.1 Work
- 2.2 Energy
- 2.3 Power
- 2.4 Energy resources

##### **P3. Thermal Physics\***

- 3.1 Simple kinetic model of matter
- 3.2 Matter and thermal properties
- 3.3 Thermal processes

##### **P4. Properties of waves, including light and sound\***

- 4.1 General wave properties
- 4.2 Light
- 4.3 Electromagnetic spectrum
- 4.4 Sound

##### **P5. Electrical quantities**

- 5.1 Electric charge
- 5.2 Current, potential difference and electromotive force (e.m.f.)
- 5.3 Resistance

##### **P6 Electric circuits\***

- 6.1 Circuit diagrams
- 6.2 Series and parallel circuits
- 6.3 Electrical energy
- 6.4 Dangers of electricity

NOTE: Units marked with an asterix (\*) are covered (at least in part) in the Australian Curriculum in years 7, 8 or 9. Where appropriate, these topics will be revised using a flipped classroom model (see attachment for more details).

#### SUBJECT EQUIPMENT

Students must bring the following equipment to every lesson: work book, writing equipment – pens, pencil, ruler, etc., and a scientific calculator. Covered shoes must be worn for safety during practicals.

## ASSESSMENT

TASK	DUE DATE	WEIGHTING
Research assignment	Week 7	25%
Exam 1	Week 10	25%
In-class experimental report	Week 15	25%
Exam 2	Week 18	25%

## Assessment objectives

The three assessment objectives in Combined Science are:

AO1: Knowledge with understanding

AO2: Handling information and problem solving

AO3: Experimental skills and investigations

A description of each assessment objective follows.

### AO1: Knowledge with understanding

Students should be able to demonstrate knowledge and understanding of: • scientific phenomena, facts, laws, definitions, concepts and theories • scientific vocabulary, terminology and conventions (including symbols, quantities and units) • scientific instruments and apparatus, including techniques of operation and aspects of safety • scientific and technological applications with their social, economic and environmental implications.

Syllabus content defines the factual material that candidates may be required to recall and explain. Candidates will also be asked questions which require them to apply this material to unfamiliar contexts and to apply knowledge from one area of the syllabus to another. Questions testing this assessment objective will often begin with one of the following words: *define, state, describe, explain (using your knowledge and understanding) or outline (see the Glossary of terms used in science papers in section 7.6).*

### AO2: Handling information and problem solving

Students should be able, in words or using other written forms of presentation (i.e. symbolic, graphical and numerical), to: • locate, select, organise and present information from a variety of sources • translate information from one form to another • manipulate numerical and other data • use information to identify patterns, report trends and draw inferences • present reasoned explanations for phenomena, patterns and relationships • make predictions and hypotheses • solve problems, including some of a quantitative nature.

Questions testing these skills may be based on information that is unfamiliar to candidates, requiring them to apply the principles and concepts from the syllabus to a new situation, in a logical, deductive way.

Questions testing these skills will often begin with one of the following words: *predict, suggest, calculate or determine (see the Glossary of terms used in science papers in section 7.6).*

### AO3: Experimental skills and investigations

Students should be able to: • demonstrate knowledge of how to safely use techniques, apparatus and materials (including following a sequence of instructions where appropriate) • plan experiments and investigations • make and record observations, measurements and estimates • interpret and evaluate experimental observations and data • evaluate methods and suggest possible improvements.

## CHEATING AND DISHONEST PRACTICE

The integrity of the College's assessment system relies upon all involved acting in accordance with the highest standards of honesty and fairness. Any departure from such standards will be viewed very seriously. Accordingly:

- Plagiarism - claiming authorship of someone else's work (intentionally or otherwise) - is a serious misdemeanour, and attracts severe penalties.
- Students are required to acknowledge the source of all material that is incorporated into their own work.
- Students may not submit the same item for assessment in more than one unit, unless specific agreement has been reached with the class teacher.

**Executive Teacher:** Ruth Edge

**Class Teacher:** Ingrid Bean

**Date:** 8<sup>th</sup> February 2019

### **Explanation of the Flipped Classroom Model**

The Combined Science course covers both the IGCSE (Cambridge) content and the Australian Curriculum (AC) Year 10 Science content. Recognising that much of the IGCSE content is in the Australian Curriculum Years 7-9, to at least introductory levels, familiar content will be revised (and expanded on) through weekly homework. This will maximise time in class to cover content that is new to our students and carry out experiments (which are fundamental to the study of Science).

Flipped Classroom homework will involve worksheets accessed and submitted through Google Classroom, using the BBC Bitesize web portal for reference material. Homework will be discussed in class each week to clarify understanding. The content covered through the Flipped Classroom will be assessed, along with content covered in class, through research assignments, experimental reports, and tests.

If parents have any questions about the Flipped Classroom Model, I encourage them to contact me directly.

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