



Lesson Plans

Year 9 Science

Chapter 2

Multi-cellular Organisms

Some general points about the following lesson plans:

- ★ The lesson plans outline only one way of sequencing the learning material in this chapter of the textbook.
- ★ The content and sequence will obviously vary from class to class (The following guide is ambitious in many instances).
- ★ All activities and investigations in each chapter have been deliberately designed to support the National Curriculum content whilst keeping in mind the development and reinforcement of skills required in the study of science in Year 11/12.
- ★ The length of lessons vary from school to school and even within schools. The following guide is based on 35/40 min lessons because it was reasoned that adjustment to 60/75/90 mins lessons would be easier than reducing lesson plans.
- ★ Students may be challenged further by completing each chapter Task, Competition Questions, Challenges, and by finding and entering any of the many competitions, challenges, projects etc that may be found on the Internet. Such students may benefit by doing an Internet search early in the year and planning entries before they close.

Assessment

A Task page 7
End of Unit Test

Content Description (5 weeks)

Chapter 2 Multi-cellular Organisms

Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)

- ★ Describe how the requirements for life (for example oxygen, nutrients, water and removal of waste) are provided through the coordinated function of body systems such as the respiratory, circulatory, digestive, nervous and excretory systems.
- ★ Explain how body systems work together to maintain a functioning body using models, flow diagrams or simulations.
- ★ Identify responses using nervous and endocrine systems.
- ★ Investigate the response of the body to changes as a result of the presence of micro-organisms.
- ★ Investigate the effects on humans of exposure to electromagnetic radiations such as X-rays and microwaves.

Content structure

The Australian Curriculum: Science has three interrelated strands: *Science Understanding*, *Science as a Human Endeavour* and *Science Inquiry Skills*.

Together, the three strands of the science curriculum provide students with understanding, knowledge and skills through which they can develop a scientific view of the world. Students are challenged to explore science, its concepts, nature and uses through clearly described inquiry processes.

Science Understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time.

The **biological sciences** sub-strand is concerned with understanding living things. The key concepts developed within this sub-strand are that: a diverse range of living things have evolved on Earth over hundreds of millions of years; living things are interdependent and interact with each other and their environment; and the form and features of living things are related to the functions that their body systems perform. Through this sub-strand, students investigate living things, including animals, plants, and micro-organisms, and their interdependence and interactions within ecosystems. They explore their life cycles, body systems, structural adaptations and behaviours, how these features aid survival, and how their characteristics are inherited from one generation to the next. Students are introduced to the cell as the basic unit of life and the processes that are central to its function.

Science Inquiry Skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments.

Science as a Human Endeavour

Through science, humans seek to improve their understanding and explanations of the natural world. Science involves the construction of explanations based on evidence and science knowledge can be changed as new evidence becomes available. Science influences society by posing, and responding to, social and ethical questions, and scientific research is itself influenced by the needs and priorities of society. This strand highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving. It acknowledges that in making decisions about science practices and applications, ethical and social implications must be taken into account. This strand also recognises that science advances through the contributions of many different people from different cultures and that there are many rewarding science-based career paths.

Science across Foundation to Year 12

Years 7–10, typically students from 12 to 15 years of age, Curriculum focus: explaining phenomena involving science and its applications

During these years, students continue to develop their understanding of important science concepts across the major science disciplines. It is important to include contemporary contexts in which a richer understanding of science can be enhanced. Current science research and its human application motivates and engages students.

Within the outlined curriculum, students should undertake some open investigations that will help them refine their science inquiry skills. The quantitative aspects of students' inquiry skills are further developed to incorporate consideration of uncertainty in measurement. In teaching the outlined curriculum, it is important to provide time to build the more abstract science ideas that underpin understanding.

Chapter 2 Multi-cellular Organisms (5 weeks)

Lesson	Method	Resources
1	<ul style="list-style-type: none"> <input type="checkbox"/> General (covering book, ruling pages, paste study guide etc.) <input type="checkbox"/> Purpose of chapter <input type="checkbox"/> Introduce/discuss The cell p8 <input type="checkbox"/> Watch a couple of online videos on 'cell membrane', 'cell nucleus', 'mitochondria', 'cytoplasm'. <input type="checkbox"/> HW: Draw and label a typical animal cell 	Internet
2	<ul style="list-style-type: none"> <input type="checkbox"/> Cell organelles p8 <input type="checkbox"/> Short test: Draw and label a typical animal cell, describe cell membrane, nucleus, mitochondria, cytoplasm <input type="checkbox"/> Cell nutrients and waste products p9 <input type="checkbox"/> Exercise p9 <input type="checkbox"/> HW: Complete exercise 	
3	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Short test: Draw and label a typical animal cell. Describe cell membrane, nucleus, mitochondria, cytoplasm. List vital nutrients needed by the cells of our body. List waste products excreted by our body cells. <input type="checkbox"/> Introduce/discuss Body Systems p10 <input type="checkbox"/> HW: Learn brief descriptions of 7 body systems 	
4	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Brief descriptions of 7 body systems <input type="checkbox"/> The respiratory system p12 <input type="checkbox"/> Activity p13 How long can you hold your breath? <input type="checkbox"/> HW: The respiratory system 	Stop watches Paper bags
5	<ul style="list-style-type: none"> <input type="checkbox"/> Watch a couple of online videos on the respiratory system' <input type="checkbox"/> Organs of the respiratory system p12 <input type="checkbox"/> HW: Organs of the respiratory system 	Internet
6	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Organs of the respiratory system <input type="checkbox"/> Activity: Lung model p13 or demonstrate lung model (implications for using the diaphragm in singing) <input type="checkbox"/> Exercise p13 <input type="checkbox"/> Challenge p13 <input type="checkbox"/> HW: Complete exercise p13 	Lung model
7	<ul style="list-style-type: none"> <input type="checkbox"/> The circulatory system p14 <input type="checkbox"/> Watch some online animations of the circulatory system <input type="checkbox"/> Activity: Can you control your heart rate p15 <input type="checkbox"/> Organs of the circulatory system <input type="checkbox"/> HW: Organs of the circulatory system 	Internet Stop watches
8	<ul style="list-style-type: none"> <input type="checkbox"/> Activity: Heart dissection p15 <input type="checkbox"/> HW: Compile slide show of heart dissection for class 	Internet Sheep's heart Dissection equipment Cameras/phone
9	<ul style="list-style-type: none"> <input type="checkbox"/> Organs of the circulatory system p14 <input type="checkbox"/> Exercise p15 <input type="checkbox"/> Challenge p15 <input type="checkbox"/> View slide shows of heart dissection <input type="checkbox"/> HW: Complete exercise p15 and review circulatory system 	
10	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Circulatory system <input type="checkbox"/> Urinary system p16 <input type="checkbox"/> Watch some online animations of the urinary system <input type="checkbox"/> HW: Organs of the urinary system 	Internet

Chapter 2 Multi-cellular Organisms (5 weeks)

Lesson	Method	Resources
11	<ul style="list-style-type: none"> <input type="checkbox"/> Activity: Kidney dissection p17 <input type="checkbox"/> HW: Compile slide show of heart dissection for class 	Internet Sheep's kidney Dissection equipment Cameras/phone
12	<ul style="list-style-type: none"> <input type="checkbox"/> Organs of the urinary system p16 <input type="checkbox"/> Exercise p17 <input type="checkbox"/> Challenge p17 <input type="checkbox"/> View slide shows of kidney dissection <input type="checkbox"/> HW: Complete exercise p17 and review urinary system 	
13	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: Urinary system <input type="checkbox"/> Digestive system p18 <input type="checkbox"/> Watch some online animations of the digestive system <input type="checkbox"/> HW: Prepare for activity p19 Testing for starch, glucose, protein 	Internet
14	<ul style="list-style-type: none"> <input type="checkbox"/> Activity p19 Testing for starch, glucose, and protein <input type="checkbox"/> HW: Organs of the digestive system 	Materials for activity p19
15	<ul style="list-style-type: none"> <input type="checkbox"/> Organs of the digestive system p18 <input type="checkbox"/> Exercise p19 <input type="checkbox"/> Challenge p19 <input type="checkbox"/> HW: Complete exercise p19 and review digestive system 	
16	<ul style="list-style-type: none"> <input type="checkbox"/> Coordination systems p20 <input type="checkbox"/> The nervous system p20 <input type="checkbox"/> The brain p21 <input type="checkbox"/> Watch online videos of the nervous system <input type="checkbox"/> Exercise p21 <input type="checkbox"/> HW: Complete exercise p21 	Internet Calculators
17	<ul style="list-style-type: none"> <input type="checkbox"/> Nervous system: Neurons p22 <input type="checkbox"/> Activity p23: Either reaction distance or Pupil dilation or both <input type="checkbox"/> Exercise p23 <input type="checkbox"/> HW Complete exercise and challenge p23 	Activity materials
18	<ul style="list-style-type: none"> <input type="checkbox"/> Endocrine system p24 <input type="checkbox"/> Glands of the endocrine system p24 <input type="checkbox"/> Exercise p25 <input type="checkbox"/> Homeostasis p26 <input type="checkbox"/> HW: Complete one of the activities p25 	
19	<ul style="list-style-type: none"> <input type="checkbox"/> Short test: The endocrine system <input type="checkbox"/> The immune system p28 and first line of defence p29 <input type="checkbox"/> Pathogens: Viruses, bacteria, protozoa p28 and p29 <input type="checkbox"/> Exercise p29 <input type="checkbox"/> HW: The immune system and complete exercise p29 	
20	<ul style="list-style-type: none"> <input type="checkbox"/> The immune system: 2nd line of defence p30 <input type="checkbox"/> The immune system: 3rd line of defence p31 <input type="checkbox"/> Watch online videos of the lymphatic system <input type="checkbox"/> Exercise p31 <input type="checkbox"/> HW: Complete exercise and challenge p31 	Internet

Chapter 2 Multi-cellular Organisms (5 weeks)

Lesson	Method	Resources
21	<input type="checkbox"/> Radiation exposure p32 <input type="checkbox"/> Radiation risk p33 <input type="checkbox"/> Exercise p33 <input type="checkbox"/> Compile Word Bank p33 <input type="checkbox"/> Complete Word Bank	
22	Chapter Review and Task <input type="checkbox"/> Exercises p38, p39, p40 <input type="checkbox"/> Begin work on 'A Task' p7 <input type="checkbox"/> HW: Complete exercises & work on task as required	
23	Chapter Review and Task <input type="checkbox"/> Exercises p41, p42 and Competition Questions p45 <input type="checkbox"/> Continue work on 'A Task' p7 <input type="checkbox"/> HW: Complete exercises & work on task as required	
24	Chapter Review and Task <input type="checkbox"/> Exercises p44 and Harder test questions p46 <input type="checkbox"/> Preparation for test <input type="checkbox"/> Continue work on 'A Task' p7 <input type="checkbox"/> HW: Complete exercises & work on task as required	
25	<input type="checkbox"/> End of chapter/unit test	