



Highfields State
Secondary College

Semester 2 Course Overview

Faculty: Science
Subject: Core Science
Year level: 9

Course Outline

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.

| Term 3 | Term 4 |
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| <p>Earth and Space</p> <p>Students explore how Earth is composed of four interacting and dynamic 'spheres', within which the global systems and cycles operate. These are the lithosphere, hydrosphere, atmosphere and biosphere. Students consider how matter cycles within and between these spheres, such as in the carbon cycle and the water cycle, and use scientific knowledge to evaluate how humans have influenced flow between these systems. Students explore approaches used to minimise carbon emissions and methods of sequestering carbon. They also consider how ethical decision making in relation to global systems could improve the state of the planet.</p> <p>Students understand that the universe is made up of a variety of features, including galaxies, stars and solar systems, and the Big Bang theory can be used to explain the origin of the universe. They outline the Big Bang theory and review evidence supporting the theory. Students identify the limitations of the Big Bang theory and recognise that theories are revised and scientific ideas change over time, as new evidence is gathered. They examine different types of star life cycles and investigate the contributions that technology has made to increased knowledge of stars over time. They examine information related to theories about the origin and fate of the universe. (begin genetics)</p> | <p>Biology and Chemistry</p> <p>Students evaluate the evidence for scientific theories that explain the origin of the universe and the diversity of life on Earth. They explain the processes that underpin heredity and evolution. Students analyse how the models and theories they use have developed over time and discuss the factors that prompted their review. They analyse how the periodic table organises elements and use it to make predictions about the properties of elements. They explain how chemical reactions are used to produce particular products. Students develop questions and hypotheses and independently design and improve appropriate methods of investigation, and laboratory experimentation. They explain how they have considered reliability, safety, fairness and ethical actions in their methods and identify where digital technologies can be used to enhance the quality of data. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings and explain any sources of uncertainty. Students evaluate the validity and reliability of claims made in secondary sources with reference to currently held scientific views, the quality of the methodology and the evidence cited. They construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes.</p> |
| Assessment | |
| <p>Exam - Students will complete a supervised assessment under timed conditions. Science exams allow students to demonstrate understanding and knowledge of key concepts.</p> | <p>Research Investigation - Students will research, analyse and interpret secondary evidence from scientific texts to answer the research topic.</p> <p>Data test - Students will complete a supervised assessment under timed conditions. Data tests allow students to demonstrate understanding and knowledge of Science Inquiry Skills.</p> |

Literacy requirements:

This unit provides opportunities for students to engage in the Australian Curriculum Content and build upon the literacy skills of:

- using technical and specific terms for concepts and features of the world,
- presenting scientific information in the form of diagrams, flow charts, tables and graphs,
- comprehending and composing texts, including those that provide information, describe events and phenomena, recount experiments, present and evaluate data, give explanations and present opinions or claims.

Numeracy requirements:

This unit provides opportunities for students to engage in the Australian Curriculum Content and build upon the numeracy skills of:

- collecting, representing and interpreting data from investigations.
- Use of formal units to provide accurate results in measuring and testing across a range of science topics.