



Highfields State
Secondary College

Semester 1 Course Overview

Faculty: Science
Subject: Enrichment 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.

Science Enrichment is for students with an interest in Science and for those considering choosing senior electives including Yr 10 Science; Yr 11 & 12 Agricultural Science, Biology, Chemistry or Physics. STEM (Science, Technology, Engineering & Mathematics fields) will be embedded into this course.

Term 1	Term 2
Pharmaceuticals and Metabolism	Modern Machines
In this unit students will develop a working knowledge of chemical nomenclature and apparatus, by applying biochemistry linked to the human body. Students engage in the exploration of chemical reactions and the application of these in living systems like the human body. They will understand that chemical changes involves the rearranging of atoms to form new substances, from biomolecules within the human body that form the natural processes of metabolism, to drugs that can have varied effects due to age, health and genetics. Students will consider the implications of drug administration, dosage and toxicity of a variety of common substances. Students will identify human body systems and the ways in which they work together in balance to support life. They outline how essential requirements for life are provided internally through a coordinated approach when metabolising drugs. Students analyse and predict the effects of chemicals on body systems, and discuss how the body responds to changes in the environment and to diseases. Students will engage with a variety of practical investigations that explore the concepts of biomolecules, metabolism and toxicity effects on organisms, whilst considering the safety, ethics and manipulative skills of conducting these experiments.	In this unit students will explore how humans have harnessed technology to solve problems. Students will examine, inquire and explain ways in which energy can be transferred through different mediums using the particle & wave models. They will also explore astronomical physics and planetary motion. Students design and conduct investigations to transmit a form of energy through a medium using available equipment and materials, using concepts of electromagnetism and small motors. Students will have opportunities to form hypotheses and investigate quantitative and qualitative data and information on the flow of electrical energy and heat energy. They analyse experimental and second-hand data and identify relationships within the data. They use these findings, scientific knowledge and prior understanding to form conclusions. Through research and video conferencing with Australian scientists, they will appreciate that advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities. They will apply their understandings to evaluate claims related to social and environmental issues and consider how the application of science affects people's lives.
Assessment	
Task 1 – Practical reports A portfolio of practical reports from a number of practicals completed throughout the term. Task 2 – Exam Pharmaceuticals (Chemistry) & the Human Body (Biology)	Task 3 – Research investigation Responding to claims about modern machines and their impacts on society.

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.