

Integrated Science

(General)

The Integrated Science General course enables students to investigate science issues in the context of the world around them. It encourages students to develop their scientific skills of curiosity, observation, collection and analysis of evidence, in a range of contexts.

The multidisciplinary approach, including aspects of biology, chemistry, geology and physics, further encourages students to be curious about the world around them and assume a balanced view of the benefits and challenges presented by science and technology.

Practical experiences form an important part of this course. They provide valuable opportunities for students to work together to collect and interpret first-hand data in the field or the laboratory.

Course Structure

Year 11

Unit 1

- In this unit, students develop an understanding of the processes involved in the functioning of systems from the macro level (cycles in nature and Earth systems) to systems at the organism, cellular and molecular level.
- Students investigate structure and function of cells, organs and organisms, and the interrelationship between the biological community and the physical environment. They use a variety of practical activities to investigate patterns in relationships between organisms
- In order to understand the interconnectedness of organisms to their physical environment, and the impact of human activity, students analyse and interpret data collected through investigations in the context studied.

Unit 2

- In this unit, students develop an understanding of the processes involved in the transformations and redistributions of matter and energy in biological, chemical and physical systems, from the atomic to the macro level.
- Students will investigate the properties of elements, compounds and mixtures, and how substances interact with each other in chemical reactions to produce new substances.
- Students explore the concepts of forces, energy and motion and recognise how an increased understanding of scientific concepts has led to the development of useful technologies and systems.

Year 12

Unit 3

- In this unit, students integrate ideas relating to the processes involved in the movement of energy and matter in ecosystems.
- Students investigate and describe a number of diverse ecosystems, exploring the range of living and non-living components, to understand the dynamics, diversity and interrelationships of these systems.
- Students investigate ecosystem dynamics, including interactions within and between species, and interactions between living and non-living components of ecosystems. They also investigate how measurements of population numbers, species diversity, and descriptions of species interactions, can form the basis for comparisons between ecosystems.
- Fieldwork is an important part of this course. Fieldwork provides valuable opportunities for students to work together to collect first-hand data and to experience local ecosystem interactions.
- In order to understand the interconnectedness of organisms, the physical environment and human activity, students analyse and interpret data collected through investigation of a local environment.

Unit 4

- This unit provides students with the opportunity to conduct scientific investigations that will increase their understanding of important scientific concepts and processes.
- Students will explore the properties of chemical substances that determine their use, and the techniques involved in separating mixtures and solutions.
- Students will investigate forces acting upon an object and the effects of kinetic, potential and heat energy on objects.
- Students will discover the way in which increases in the understanding of scientific concepts have led to the development of useful technologies and systems.
- Investigations and experimentation will be incorporated into the delivery of the course to further develop the students' skills in the areas of formulating hypothesis, planning, conducting, representing data in meaningful ways, interpreting data and scientific texts, and communicating findings to specific audiences.