

Subject	Science
Term	Cycle I
Duration (approx.)	6 lessons
Module	Chemistry—Our Atmosphere

Factual knowledge to be taught and assessed (including subject specific vocabulary)

Theories about what was in the Earth's early atmosphere and how the atmosphere was formed have changed and developed over time.

Evidence for the early atmosphere is limited because of the time scale of 4.6 billion years

For 200 million years, the proportions of different gases in the atmosphere have been much the same as they are today.

Greenhouse gases in the atmosphere maintain temperatures on Earth high enough to support life.

An increase in average global temperature is a major cause of climate change.

The combustion of fuels is a major source of atmospheric pollutants.

Skills and concepts to be developed

Extract and interpret information about resources from charts, graphs, and tables

Use orders of magnitude to evaluate the significance of data.

The Earth's resource and limitations.

Summative Assessment:

End of unit test

Link to prior learning:

Earth as a source of limited resources and the efficacy of recycling

The production of carbon dioxide by human activity and the impact on climate.

Literacy and Numeracy:

How will high standards be promoted in this module?

Literacy -

Vocabulary and definitions. Ability to use these in contexts for longer written answers.

Finite

Renewable

Potable water

Sewage

Extraction

Life cycle assessments

Reduce, reuse, recycle

Blast furnace

Environment

Numeracy –

Data estimations of percentage finite reserves.

Analysis and purification of water samples.

Subject	Science
Term	Cycle 1
Duration (approx.)	10 lessons
Module	Biology—Cell structure and transport

Factual knowledge to be taught and assessed (including subject specific vocabulary)

Understand how microscopy techniques have developed over time, explain how electron microscopy has increased understanding of sub-cellular structures.

Explain how the main sub-cellular structures, including the nucleus, cell membranes, mitochondria, chloroplasts in plant cells, and plasmids in bacterial cells are related to their functions

Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm, and genetic material enclosed in a nucleus.

Explain how the structure of different types of cell relate to their function in a tissue, an organ or organ system, or the whole organism.

Substances may move into and out of cells across the cell membranes via diffusion.

Water may move across cell membranes via osmosis. Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane. **Required practical:** Investigate the effect of salt or sugar solutions on plant tissue.

Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration.

A single-celled organism has a relatively large surface area to volume ratio. This allows sufficient transport of molecules into and out of the cell to meet the needs of the organism

Skills and concepts to be developed

Evaluate in detail the different methods used in the treatment of heart problems.

Summative Assessment:

End of Topic Assessment

Link to prior learning:

Yr7 Structure and Function / Cells

Literacy and Numeracy:

How will high standards be promoted in this module?

Literacy -

Vocabulary and definitions. Ability to use these in contexts for longer written answers.

Numeracy –

Students should be able to use simple compound measures such as rate and carry out rate calculations for blood flow.

Explain how to make estimates more accurate in terms of precision of data.

Subject	Science
Term	Cycle I
Duration (approx.)	9 lessons
Module	Physics— Conservation and dissipation of

Factual knowledge to be taught and assessed (including subject specific vocabulary)

A system is an object or group of objects.
There are changes in the way energy is stored when a system changes.

Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed.

When a force causes an object to move through a distance work is done on the object.
So a force does work on an object when the force causes a displacement of the object.

The amount of gravitational potential energy gained by an object raised above ground level can be calculated using the equation $g p e$

Students should be able to calculate the amount of energy associated with a moving object, a stretched spring and an object raised above ground level.

Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed.

The energy efficiency for any energy transfer can be calculated using the equation

A system is an object or group of objects.
There are changes in the way energy is stored when a system changes

Power is defined as the rate at which energy is transferred or the rate at which work is done

Skills and concepts to be developed

Analyse the changes in temperature when a material is heated, leading to the experimental determination of specific heat capacity along with corresponding calculations.

Summative Assessment:

End of Unit Test

Link to prior learning:

P2.2 Energy adds up
P2.7 Energy and power
P2.8 Work, energy and machines

Literacy and Numeracy:

How will high standards be promoted in this module?

Literacy -

Vocabulary and definitions. Ability to use these in contexts for longer written answers.

Numeracy –

Use of equations as stated in specification .