Cambridge Lower Secondary Programme Science Curriculum Framework: Year 9

Scientific Enquiry

Students should be able to:

- Choose ideas and produce plans for testing based on previous knowledge and research.
- Use preliminary work to decide how to carry out an investigation.
- Decide which measurements and observations are necessary.
- Decide which apparatus to use and assess any hazards.
- Use appropriate sampling techniques where required.
- Choose the best way to present results.
- Describe patterns seen in results.
- Interpret results using scientific knowledge and understanding.
- Evaluate the methods used and use this to refine methods for further investigations.
- Compare methods and results used by others.
- Look critically at sources of secondary data.

Biology

Plants

Students should be able to:

- Explain the process of photosynthesis. Bp2
- Use the word equation for photosynthesis. Bp2
- Understand the importance of water and mineral salts to plant growth. Bp3
- Understand sexual reproduction in flowering plants including pollination, fertilisation, seed formation and dispersal. Bp4

Ecosystems

Students should be able to:

- Explain ways in which living things are adapted to their habitats. Be1
- Explain food chains, food webs and energy flow. Be2
- Explain the role of decomposers. Be2
- Describe factors affecting the size of populations. Be3
- Describe some effects of human influences on the environment. Be4

Variation and Classification

Students should be able to:

- Understand that organisms inherit characteristics from their parents through genetic material that is carried in cell nuclei. Bv1
- Use keys to identify plants and animals. Bv2
- Describe how selective breeding can lead to new varieties. Bv4

Note: The codes provided refer to the corresponding Checkpoint learning outcomes.

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Chemistry

Chemical Change

Students should be able to:

- Explain the idea of endothermic and exothermic reactions. Cc3
- Describe the reactivity of metals with oxygen, water and dilute acids. Cc4
- Understand the reactivity series. Cc4
- Give examples of displacement reactions. Cc4
- Explain how to prepare some common salts by the reactions of metals and metal carbonates and be able to write word equations for these reactions. Cc7
- Give a qualitative explanation of the effects of concentration, particle size, temperature and catalysts on the rate of a reaction. Cc8

Periodic Table

Students should be able to:

- Describe the structure of an atom. Cp1
- Compare the structures of the first twenty elements of the Periodic Table. Cp1
- Describe trends in groups and periods. Cp2

Physics

Electricity

Students should be able to:

- Describe electrostatics and the concept of charge. Pc2
- Interpret and draw simple parallel circuits. Pc3
- Explain how common types of components, including cells, affect current. Pc4
- Explain how current divides in parallel circuits. Pc5
- Measure current. Pc6
- Use ammeters and voltmeters. Pc6

Energy

Students should be able to:

- Use knowledge of energy sources including fossil fuels and renewable energy resources to consider the world's energy needs. Pe3
- Identify and explain the thermal (heat) energy transfer processes of conduction, convection and radiation. Pe3

Measurement and Properties of Matter

Students should be able to:

- Explain cooling by evaporation. Pp2

Forces and Motion

Students should be able to:

- Explain that pressure is caused by the action of a force on an area. Pf3
- Determine densities of solids, liquids and gases. Pp4
- Explain pressures in gases and liquids (qualitative only). Pf4

Note: The codes provided refer to the corresponding Checkpoint learning outcomes.