TENBY INTERNATIONAL SCHOOL SETIA ECOHILL | iSP International Schools Partnership

SCIENCE

Introduction

Our KS3 science curriculum gets the learners thinking like a scientist while providing a comprehensive coverage of the Cambridge Lower Secondary Science curriculum framework. The three years science program builds a strong foundation in developing subject-specific vocabulary and key concepts with plenty of opportunities to develop scientific enquiry skills, such as planning for experiments, making predictions and gathering results, to helps our learners to think and work scientifically. In addition to that, the teaching and learning resources help our learners develop critical thinking, communication and collaboration skills. The Science curriculum fosters active and independent learning, provides differentiation and assessment for learning opportunities with the aim to help students achieve their potential and preparing for IGCSE Sciences.

Grading Breakdown	
Assessment	100%

Year 7

Term 1	Topics: Unit 1 Cells, Unit 2 Materials and their structure, Unit 3 Forces and Energy	Scope: Unit 1 Cells • Identify the part of plant and animal cells • Learn how to handle microscope • Describe and distinguish the structure of plant and animal cell structure • Describe specialised cells and their functional adaptations • Describe the hierarchical organisation of cells, tissues, organs and organ systems Unit 2 Materials and their structure • Describe the properties of solid, liquid and gas • Describe and explain the processes involved in the change of phases for each state of matter • Describe and explain the formation of rain and how water cycle works • Define, describe and distinguish atoms, elements, compounds, and mixture Unit 3 Forces and energy • Describe and explain about gravity, mass and weight, including the equation • Apply the mathematical formulae to solve calculation related problems • Describe the formation of solar system and the role of gravity in formation tides • List the types of energy and their roles in daily life
Term 2	Topics: Unit 4 Grouping and identifying organism, Unit 5 Properties of materials, Unit 6 Earth Physics	Scope: Unit 4 Grouping identifying organism • List and describe the seven characteristics of living organisms • Describe the characteristics of virus and how they reproduce • List and compare some distinct species • Construct dichotomous keys and identify organisms based on the keys. Unit 5 Properties of materials • Describe and compare the differences between metals and non-metals • Describe and compare the differences between elements and compound • Describe the characteristics of acid and alkali solution • Describe the usage of pH scale which is one of the important analytical skills in science Unit 6 Earth Physics • Describe and explain reflection of sound wave • Describe the basic properties of sound waves • Describe structure of Earth and the history of tectonic plates movement • Describe and explain the formation of volcanoes and mountains on Earth • Describe and explain how particle movement causes pressure in liquids and gases and predict how changes in liquids and gases affect the pressure • Describe how random movement of particles causes diffusion • Describe and explain how diffusion happens in liquids and gases

Term 3	Topics: Unit 7 Microorganism in the environment, Unit 8 Changes in materials, Unit 9 Electricity	Scope: Unit 7 Microorganism in the environment • State and describe the role of microorganisms as an important biotic component in the environment • Describe and explain food chain and food web • Explain the role of microorganisms in the environment as decomposers Unit 8 Changes in materials • Describe simple chemical reaction • Write chemical word equation • Describe and conduct simple chemical reaction experiments • Describe and record observations • Draw conclusions from chemical experiment • Describe methods to test gases like carbon dioxide, oxygen, and hydrogen Unit 9 Electricity • Define and describe insulators and conductors • List some electrical components • Draw simple electrical circuit • Describe how to construct a simple electrical circuit • Describe how to measure current using ammeter

How students are assessed

Students will have speaking, listening, making sentences and writing short essays based on their individual levels. They are required to develop their skills in describing topics covered.
Student progress will be assessed by:

- Topic presentations
- Reading & Reading Assessments

Year 8

Term 1	Topics: Unit 1 Respiration, Unit 2 Properties of materials, Unit 3 Forces and Energy	Scope: Unit 1 Respiration • Describe how the structure of the human respiratory system is related to its function • Describe the diffusion of oxygen and carbon dioxide between blood and the air in the lungs • Compare the composition of inspired and expired air • Describe what an analogy is and how it can be used as a model • Plan a range of investigations of different types, while considering variables appropriately, and recognise that not all investigations can be fair tests • Know that aerobic respiration occurs in the mitochondria of plant and animal cells and gives a controlled release of energy • Describe the components of blood and their functions Unit 2 Properties of materials • Define solvent, solute, solution • Explain some of the properties of solutions by using particle theory • Describe how to take appropriately accurate and precise measurements • Explain why accuracy and precision are important in measurements • Understand that the concentration of a solution relates to how many particles of the solute are present in a volume of the solvent • Describe how the solubility of different salts varies with temperature • Plan a range of investigations of different types, while considering variables appropriately, and recognise that not all investigations can be fair tests • Describe the use of chromatography to separate dissolved substances • Interpret the chromatograms Unit 3 Forces and Energy • Describe the effects of balanced and unbalanced forces on motion • State the unit of speed and how to work out the unit • Write the equation for speed and apply the equation to solve problems • Interpret movement from motion graph • Draw and interpret a distance-time graph • Describe the turning effect of a force • Define moment • Write equation of moment and use the equation to calculate moment • Define pressure • Describe the factors that affect pressure • Describe and explain how particle movement causes pressure in liquids and gases and predict how changes in liquids and gases affect the pressure • Describe how random movement of particles causes diffusion • Describe and explain how diffusion happens in liquids and gases

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Term 2	Topics: Unit 4 Ecosystems, Unit 5 Materials and cycles on Earth, Unit 6 Light	Scope: Unit 4 Ecosystems • Define and describe ecosystems, using the Sonoran Desert as an example. • List and compare a range of different ecosystems; exploration of a local ecosystem; an ecosystem contains many different habitats. • Explain how introduced species can affect ecosystems • Explain how non-biodegradable substances may accumulate in organisms, and become magnified along a food chain Unit 5 Materials and cycles on Earth • Define and describe the structure of the atom • Describe different models for the structure of the atom from different scientists • Define purity • Calculate the percentage purity of product in a reaction • Describe the difference between weather and climate and explain the importance of recording the weather data. • Explain how the Earth's climate has changed in the past. ice ages, glacial and interglacial periods. • List the evidence for climate cycles. • Describe how the atmosphere has changed over the lifetime of the Earth. • Explain how the changing atmosphere has an impact on the climate. • List renewable resources. Unit 6 Light • Define reflection of light from a plane surface • Define the law of reflection • Draw ray diagrams to show reflection of light • Define and describe refraction of light at the boundary between air and glass or air and water, • Explain how light changes speed when it passes between different substances • Draw ray diagrams to show how light is refracted • Know that white light is made from many colours • Explain how dispersion of white light can be done with a prism • List the colours of white light in the correct order • Describe what happens when colours of light are added, what happens when colours of light are subtracted and explain why we see different colours in terms of reflection. • Understand that galaxies contain dust, gas, stars and other solar systems. • Describe asteroids are rocks in galaxies
Term 3	Topics: Unit 7 Diet and growth, Unit 8 Chemical reactions, Unit 9 Magnetism	Scope: Unit 7 Diet and growth • State carbohydrates, fats, protein, minerals, vitamins and water as nutrients • Describe and explain the concept of a balanced diet, and that different people need different diets. • Describe and explain growth and development • Describe the effects of exercise and smoking on health • State and describe the structure of skeleton; joints; and antagonistic muscles Unit 8 Chemical reactions • Define and describe exothermic reactions • Plan and carry out an investigation • Record results and observation and interpret findings from an investigation • Describe reactions of metals with oxygen • Describe reactions of metals with water • Describe reactions of metals with dilute acids Unit 9 Magnetism • Define and describe magnetic field • Draw the magnetic fields that surround magnets and understanding how magnetic fields interact • State the Earth has a magnetic field and that the core of the Earth acts as a magnet • Describe how to make an electromagnet • State some applications of electromagnet • State factors that affect the strength of an electromagnet • Investigate how these variables affect the strength of an electromagnet

How students are assessed

There will be two assessments (one per half-term) and a term examination covering topics learned throughout the term. The tracking sheet on the cover of their exercise book emphasise on the areas of focus for the students based on the records of their periodic assessment.

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Term 1	Topics: Unit 1 Plants, Unit 4 Materials properties, Unit 5 Energy changes, Unit 9 Forces in action	Scope: Unit 1 Plants • Define and describe photosynthesis • Explain how the glucose (starch) is produced and where it stored • Identify and name the flower parts like petal, anthers, pollen, ovaries and ovules • Describe and explain how the sexual reproduction involving the gametes, the pollination process and the types of pollination. • Describe and explain how fruits formed and the seeds dispersal • Name the agents in dispersing the seeds • State the factors helping in dispersing the seeds Unit 4 Material properties • Name and describe the atomic structure and subatomic particles • Name group 1 elements, describe their properties, and describe and compare their reactivity with water • Name Group 7 & 8 elements, describe their properties, describe and compare and their reactivity Unit 5 Energy changes • Define combustion • Describe how to identify exothermic and endothermic reactions • Give examples of exothermic and endothermic reactions • Define exothermic and endothermic Unit 9 Forces in action • State mass, volume and density • Compare the densities of different materials • Define liquid pressure and describe how pressure increases with depth • Explain atmospheric pressure is due to particles in the air • Describe the turning effect of a force • Write the equation of moment • Calculate moment of a force by using the equation
Term 2	Topics: Unit 2 Living things in their environment, Unit 6 Reactivity, Unit 7 Salts, Unit 10 Electricity	Scope: Unit 2 Living things in their environment • Describe plants and animals' adaptation in different climatic conditions • Describe the Ecological arrangement of living things • Describe and explain how the food web is designed by nature • Describe the functions of decomposers • State the total population in the world and explain how the population effects the food production. • Describe pollution and explain how the pollution effects the environment • Describe how human destructs the habitat • Explain how to protect the environment Unit 6 Reactivity • Describe chemical reaction of different metals with oxygen • Write word equation • Identify reactants and products of a chemical reaction • Describe the reaction of metals with water and their products • Describe the reaction of metals with dilute acids • Arrange the different metals according to their reactivity • Explain displacement reaction and how the more reactive metal displaces the least. • State the uses of displacement reactions in daily life Unit 7 Salts • Define meaning of salt • Describe how salts are prepared by reacting metals with acids • Describe how metal carbonates and acids react • Explain neutralisation • Describe how salts are prepared by neutralisation. Unit 10 Electricity • Define electricity • Define static electricity, positive and negative charges. W • Describe the role of electron and how it moves • Describe how to distinguish a conductor from an insulator. • Define electric current in the circuit • State and describe the types of circuits
TERM 3	Topics: Unit 8: Rate of Reaction, Unit 11: Energy, Unit 3: Variation & Inheritance	Scope: Unit 8 • Determine the rate of a reaction using a line graph • State and explain the factors that can affect the rate of a chemical reaction, such as surface area, temperature, concentration etc. • Define catalyst and explain their functions in a chemical reaction Unit 11 • Compare renewable and non- renewable energy. • State fossil fuels • Describe different types of energy transfer processes such as conduction, convection, evaporation and radiation Unit 3 • Define and describe inheritance & variation • Explain the concepts of natural selection and selective breeding in detail

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