

## Form 1 Science Curriculum

<b>Objectives: At the end of the lessons, students should be able to</b>
<b>First Term</b>
Understand how scientists work and appreciate the contributions of the scientists
Identify and draw the scientific apparatus, and state their uses
State the safety equipment and safety precautions in a laboratory
Perform some basic skills in doing experiments, i.e., mixing solutions, using Bunsen burner, making measurements
State the steps of carrying out a scientific investigation
Identify the variables and design a fair test
State and observe the characteristics of living things
Appreciate the diversity of living things on earth and state their habitats
Observe the variations within the same kind of living things and show the variations in a bar chart or a histogram
Understand the need for classification and suggest different ways to classify the living things
Use and construct a key to identify living things
State the meaning of endangered species and explain the effects of human activities on wildlife
Explain the importance of protecting wildlife and suggest ways of conserving wildlife
State the basic unit of living things
State the uses of different parts of a microscope and observe cells under a microscope
Identify and draw the basic structure of a plant cell and an animal cell, and explain the functions of different parts of a cell
Outline how a cell divides and grows
State the differences of two types of reproduction, i.e., asexual reproduction and sexual reproduction
State and identify the human sex cells
State and identify both male and female reproductive system, and state the functions of different parts of the human reproductive system
Outline how human reproduce and state the importance of parental care
State that the double helix structure of DNA is based on the base pairing of A with T and C with G
<b>Second Term</b>
State different forms of energy and give examples for each form of energy
Understand that energy can be changed from one form to another form and state the energy conversion in different examples of energy converters
Understand the potential risk of uncontrolled energy conversion
State the commonly used fuels in Hong Kong
State the properties of good fuels

State and explain the safety precautions when using fuels
Outline how electricity is generated
State the types of energy sources in Hong Kong
State the limitations and disadvantages of using fossil fuels
State the difference between renewable and non-renewable energy sources
Suggest ways to solve the problem of energy crisis
State the importance of water
State the types of impurities in water
Explain and perform the methods of water purification, i.e., sedimentation, filtration and distillation
Suggest ways to kill microorganisms in water
Outline the water treatment process in Hong Kong
Explain the water cycle
Investigate the factors affecting the rate of evaporation of water
State the importance of water conservation and suggest ways to conserve water
Explain the causes of water pollution
Identify a solvent, a solute and a solution
State the meaning of a saturated solution
Investigate the factors affecting the rate of dissolving
Grow crystals in the laboratory
Give examples of solvents other than water and understand the potential hazards of using organic solvent
State the three states of matter and their properties
Observe and describe the change of states of matter
Outline the particle theory of matter
Describe the three states of matter using the particle model
Explain the gas pressure using the particle model and measure the gas pressure
Give some examples in our daily life which show the effect of atmospheric pressure
State the meaning of density and calculate density
Give some examples in our daily life which show thermal expansion and contraction
Explain thermal expansion and contraction using the particle theory

#### Form 2 Science Curriculum

<b>Objectives: At the end of the lessons, students should be able to</b>
<b>First Term</b>
State the composition of air
Use some tests to show the presence of oxygen, carbon dioxide and water in the air
State and explain the difference between breathed and unbreathed air

State the conditions for burning and suggest ways to put out fire
Suggest and explain some safety precautions which help avoid fire accidents
Outline how humans obtain energy from food and state the meaning of respiration
Find out the amounts of energy in different snacks
Outline how green plants obtain energy and state the meaning of photosynthesis
Use various ways to test for the products of photosynthesis
Investigate the conditions required for photosynthesis
State the importance of photosynthesis
Find out the rate of gas exchange in animals
Investigate how the light intensity affects the gas exchange in plants
Explain the cause of greenhouse effect and global warming
State the causes of air pollution and its effects
Understand the potential hazards of smoking and passive smoking
State the conditions required for current flow
State the difference between electrical conductors and insulators and give examples
State the meanings of current, voltage and resistance and measure current, voltage and resistance in the laboratory
Investigate the factors affecting the resistance of a wire
Use rheostats to adjust resistance
Draw circuit diagrams using different symbols
<b>Second Term</b>
Identify and make series and parallel circuits
Find out the heating effect of current and state its applications
Explain the design of three-pin plugs and mains socket
Explain the importance of earth wires, earthing and ring circuits
State the potential dangers in using mains electricity and suggest some safety precautions
Calculate electrical power and the cost of electricity
Find out the magnetic effect of current
Suggest some examples of acids and alkalis in our daily life
Suggest some safety precautions when handling acids and alkalis
Use indicators for distinguishing acids and alkalis
State the effects of acids on metals and building materials
State the causes of acid rain and its effects
State the effect of neutralization and the products formed during neutralisation
State some common uses of neutralization
State some common uses of acids and alkalis in our daily life
State the importance of sensing the environment and the sense organs in humans
Explain the functions of different parts of a human eye
Explain how an image is formed in the eye

Understand the limitations of human eyes
State the difference between short sight and long sight
Explain how sound is produced and transmitted
Explain the functions of different parts of a human ear
Understand the limitations of human ears
State the causes of noise pollution and its effects
State the importance of skin and compare the sensitivity of different parts of the skin
Understand the limitations of human skin
State the importance of smell and taste receptors
State the importance of human brain in relation to human sensation and state the main parts of the brain
State the effects of alcohol, drugs and solvents on our senses
State the effects of forces
State the difference between contact forces and non-contact forces and give examples
Measure forces
State the meaning and effect of friction and measure friction
Suggest different ways to reduce friction
State the difference between mass and weight and state the meaning of the force of gravity
Distinguish action and reaction forces and state some common uses
Explain the importance of streamlined design in rockets and state the types of fuels used
Appreciate the work of astronauts and scientists towards space travel