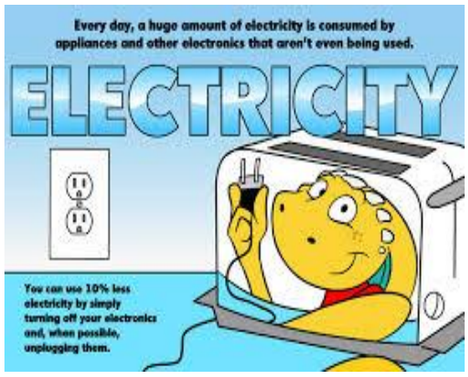
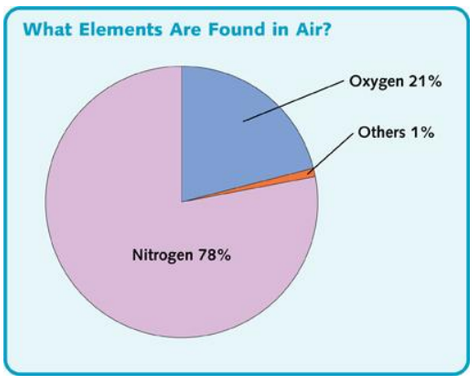
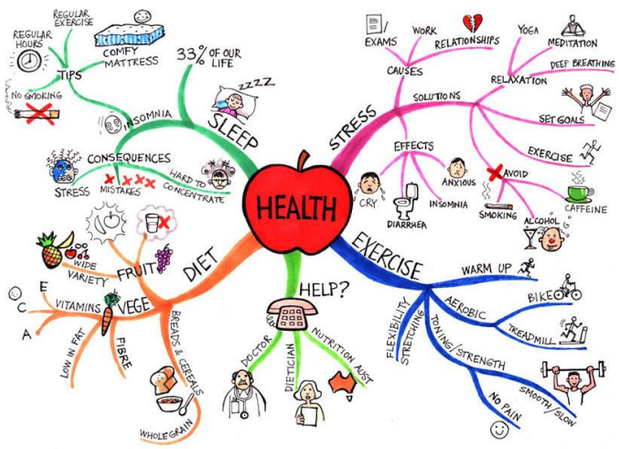
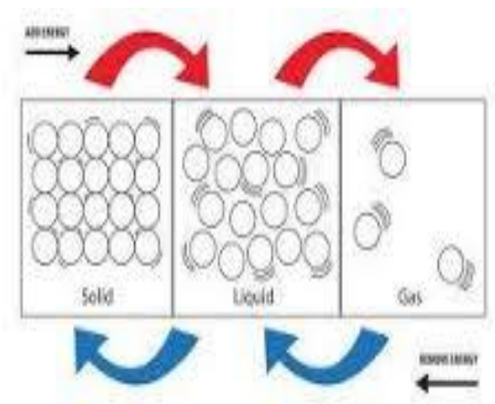
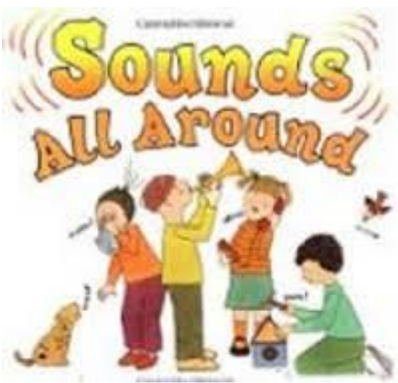
DAWOOD PUBLIC SCHOOL
SCIENCE SYLLABUS 2014-15
CLASS V











Book: ***International primary Science 5*** *Work Book-5 Ho Peck Leng- Marshall Cavendish Education*

Aims:

The Science Syllabus aims to:

- Provide students with experiences which build on their interest in and stimulate their curiosity about their environment.
- Provide students with basic scientific terms and concepts to help them understand themselves and the world around them.
- provide students with opportunities to develop skills, habits of mind and attitudes necessary for scientific inquiry prepare students towards using scientific knowledge and methods in making personal decisions
- help students appreciate how science influences people and the environment

Monthly Syllabus:

Months	Contents
August/ September	Discovering plants
October	Gases all around
November	Electricity /Revision
December	Mid Year Examination
January	Keeping healthy
February	Keeping healthy
March	Changing states of matter
April	Sounds all around
May	Final Examination

August

Discovering Plants Chapter: 4, pg 81-117

In this unit, pupils build on their previous knowledge reproduction and plant growth to develop their knowledge of:

- Sexual reproduction in flowering plants including pollination, fertilisation, seed formation and dispersal.

Scientific Enquiry work focuses on:

- Selecting ideas and plans for testing based upon previous knowledge, understanding and research.
- Using appropriate sampling techniques where required to obtain reliable measurements.
- Present results, describing correlations and drawing conclusions.
- Choosing apparatus and deciding which measurements and observations are necessary.
- Assessing any hazards and controlling risk.
- Obtaining reliable results.
- Making conclusions using scientific knowledge and understanding

Recommended Vocabulary for this unit:

Pollination, fertilization, dispersal, pollen, ovule, germination, edible, fleshy, temperature, dicotyledonous, monocotyledon.

Contents	Learning Objectives	Activity	Resource
Reproduction of flowering plants The need for reproduction. Pollination and its types. Fertilization Seed and fruit dispersal. Germination Plant growth and life cycle	Understand sexual reproduction in flowering plants including pollination, fertilization, seed formation and dispersal. Review the functions of each part and explain that the flower is the part where sexual reproduction takes place. Identify the positions and functions of the reproductive parts of a flowering plant. Explain what is meant by pollination. Discuss different ways pollen may travel from one flower to another. Discuss the advantages and dis-advantages of self-pollination and cross-pollination. Explain what is meant by fertilisation. Observe pollen tubes using a microscope. Discuss the variety of seeds and identify what part of different plants contains the seed e.g. cherry stones, orange pips, tomato seeds, wheat ears. Evaluate the methods used and refine for further investigations. Research the life cycle of a flowering plant and display on a hoop of paper.	They will select locally occurring flowering plants, identify the different parts of the plant, including leaf, stem, roots, flower They will discuss the difference between flowers from different plant. Will Investigate examples of wind and insect pollinated flowers (live, diagrams or photographs) and if possible a local flower showing the pollen and sticky stigma clearly. They will draw diagrams to show how the pollen causes a tube to grow down the style and into the ovary to allow fertilization. Students will observe soaked broad bean seeds with the help of hand lenses. They will examine a wide range of fruits and discuss methods of dispersal. They will Investigate wind dispersal by making a paper model (two or more wings and a weighted centre).	Selection of locally occurring flowering plants. Photos may be substituted for live specimens. Selection of flowers from locally occurring plants, Hand lenses. Microscopes, fresh pollen grains, glucose sol, slides and cover slips. A range of fruits. Photos may be substituted for live specimens. http://resources.Woodlands junior.kent.sch.uk/revision/science/living/plants.html http://www.primaryresources.co.uk/science/flower.htm http://urbanext.illinois.edu/gpe/case4/c4m1ac.html (Power point presentation)

October
Gases All Around
In this unit, pupils build on their previous knowledge of materials and their properties to develop their knowledge of how the recognize gases as state of matter, their properties and uses, different gases in atmosphere (their harmful and useful effects) air content in soil and air as good insulator of heat.

Recommended Vocabulary for this unit:

nobel gases, helium, neon, argon, oxygen, carbon dioxide, hydrogen gas, advertisement, laser lights, food conservation and packaging, breathing, global warming, greenhouse effect, combustion

Contents	Learning Objectives	Activity	Resource
Properties of matter/gases. Gases have mass and occupy space. Do gases have definite shapes and volume? Gases around us. Air content in soil. Air as an insulator.	State that matter is anything that has mass and occupies space. Differentiate between the three states of matter (solid, liquid, gas) in terms of shape and volume. Explain why gases have a pressure. Explain why it is possible to blow up a balloon or fill a gas syringe with gas. Understand that air is a mixture of different gases. Explain the uses of the gases present in the air. Know that air is trapped in soil to enable the animals which live in the soil to breathe. Explain air as a good insulator of heat. Outline plans to carry out investigations, considering the variables to control, change or observe.	Students will measure mass and volume using appropriate apparatus. Students will try to compress air in syringes or balloons. Give explanations in terms of trying to force things together. Demonstrate pressure in a gas. A container of at least three liters is connected to a vacuum or suction pump and compressed by the pressure of the atmosphere. They will Identify good and poor conductors of heat. good conductors: metals poor conductors: wood, plastics, air	Small sealed plastic syringes without needles should be used. Flexible container e.g. plastic bottle, vacuum or suction pump, balloons, tin with lid as suggested.

November
Electricity Chap 6 (pg 141 – 151)
In this unit, pupils were able to understand the term "static electricity" in term of charges, its usage in the daily life and ways of using and conserving electricity.

- Static electricity and the concept of charge,
- How common types of component, including cells (batteries), affect current.

Recommended Vocabulary for this unit:

Charge, positive, negative, insulator, attraction, repulsion, static.

Contents	Learning Objectives	Activity	Resource
What is static electricity Uses of static electricity Using and saving electricity	Describe static electricity and the concept of charge. Make observations and measurements. State the uses of static electricity in air conditioner filters, electrostatic wipes, electrostatic dusters, photocopiers and spray painting etc. Know that many objects around us such as electrical appliances, lighting and IT gadgets, run on electricity. Understand how to use and save electricity wisely and effectively.	Students will charge by rubbing, plastic rulers pick up small pieces of paper, strips of cling film spring apart, balloons stick to walls, plastic rods deflect a steady stream of water etc. Will explain that only negative charges move in these circumstances and that by moving away from a neutral site they leave a net positive charge. They will also induce opposite charges on neutral material. The effect is only noticeable on insulators because conductors allow negative charge to pass to the hand and then to earth.	Plastic rulers, balloons, plastic rods, pieces of cloth e.g. duster/T-shirt. http://www.sciencemadesimple.com/static.html http://www.quia.com/rr/48147.html

December: Mid Term Exams

January

Keeping healthy Chap 1 (pg 1-14)

In this unit, pupils build on their previous knowledge of the characteristics of living things to develop their knowledge of

- The basic components of the circulatory system and their functions.
- To develop the understanding of the structure and function of human heart
- Distinguish between contagious and non- contagious diseases (their causes, symptoms and preventions)
- Differentiate between analgesic and medicinal drugs.
- The effects of smoking.

Recommended Vocabulary for this unit:

Circulation, contagious, non- contagious, blood vessels, heart, plasma, arteries, veins, capillaries, addiction, antibiotics, antiviral, nicotine, tobacco

Contents	Learning Objectives	Activity	Resource
Circulatory system in the human body. Blood Blood vessels. The Heart Contagious and non-contagious diseases. Useful and harmful drugs. Tobacco	Recognise and model the basic components of the circulatory system and know their functions. Explain the functions of the blood. Recognise white and red blood cells. Relate the structure of red blood cells and white blood cells to their functions Use diagrams to show that blood transports substances around the body. Recognize the heart as a muscular organ whose function is to pumping of blood. Distinguish between contagious and non contagious diseases, their causes, symptoms and preventions. Understand that drugs are substances that can change the functions of the body, specially the brain and nervous system, when taken into the body. Understand the term drug abuse. Know that tobacco contains nicotine which can cause addiction and damage to the brain and heart.	Name the major parts of the circulatory system. Explain the working of the heart. Prepared slides An appropriate video will be screened for studying the heart. Listen to a heart-beat through a stethoscope, a home-made one will work. Demonstration of a dissection of an animal heart Students will carefully through magazines and internet. Collect pictures showing different contagious and non contagious diseases. (Group assignment)	Heart, lung, artery, vein, capillary. Produce advice posters or power pointpresentations on taking care of your heart. http://sumanasinc.com/webcontent/animations/content/humanheart.html Magazines and internet.

February
Changing States of Matter Chap 4 (pg 55 – 73)
In this unit, pupils build on their previous knowledge of materials and their properties to develop their knowledge of how the particle theory of matter and how this can explain the properties of solids, liquids and gases, including changes of state.

Recommended Vocabulary for this unit:

Melting, boiling, freezing, condensing, evaporating, water cycle, precipitation, condense, filtration, distillation, water vapours

Contents	Learning Objectives	Activity	Resource
Changes of state When water loses heat (freezing and condensation) When water gains heat (melting, boiling, evaporation) The water cycle and its importance. Purifying and treating water	Differentiate between the three states of matter (solid, liquid, gas) in terms of shape and volume Recognise that water can exist in three interchangeable states of matter. Show an understanding of how water changes from one state to another. Melting (solid to liquid) Evaporation/Boiling (liquid to gas) Condensation (gas to liquid) Freezing (liquid to solid) Recognise the importance of the water cycle. Recognise the importance of water to life processes Explain the purification of water by distillation and filtration. Know that water is precious and must be conserved.	Students will compare water in 3 states. Students will Investigate the effect of heat gain or loss on the temperature and state of water and communicate findings. when ice is heated, it melts and changes to water at 0^oC when water is cooled, it freezes and changes to ice at 0^oC when water is heated, it boils and changes to steam at 100^oC when steam is cooled, it condenses to water	Show concern for water as a limited natural resource and the need for water conservation. Thermometers, heating apparatus (e.g. Bunsen), Ice, beakers, thermometers, heating apparatus (e.g. Bunsen).

March

Sounds all around Chap 5 (pg 119 – 139)

In this unit, pupils build on their previous knowledge of the types of energy to develop their knowledge of:

- The properties of sound in terms of movement of air particles.
- The link between loudness and pitch and frequency.
- Sounds as a source of communication and expression, terms like frequency, pitch, echo and internal structure of human ear.

Recommended Vocabulary for this unit:

Vibration, waves, ear drum, pitch, frequency, echo.

Contents	Learning Objectives	Activity	Resource
Sounds around us. Sounds are produced by vibration. Travelling sound Sound waves How do our ears hear sounds? Can sound travel through solid, liquid and gases? Pitch Pleasant and unpleasant sounds.	The properties of sound in terms of movement of air particles. Understand that sounds are produced by vibration. Investigate how fast travels sound. Discuss examples which show that sound is travelling more slowly than light (noise across a field, thunderstorms). Relate sound to hearing. Demonstrate ear structure using a model ear. Discuss ways of preventing ear damage. Demonstrate the sound can be travel through solid, liquid and gases a 'slinky Students should discuss that sound also travels through water (swimming pools, whales, ultrasound) and through solids (ticking watch through table, railway lines etc). Distinguish between pleasant and unpleasant sounds, high pitched end unpleasant sounds, high pitched end Define the term echo as a reflected sound.	Students will Investigate how sounds are made. They will make sounds with simple objects such as plucking stretched elastic bands on a box, twanging rulers, blowing across test tubes. Pupils should suggest how their 'instrument' might be given a range of different notes and the ability to be loud or soft. Model ear, Correcting common misconceptions about sounds.	Rulers, rubber bands, dried peas, containers e.g. yogurt cartons, test-tubes, cardboard tubes, metal rods etc. A sharp sound which can be heard at least 200 m away. Stop watches.

April

Revision for final exams

May

Final Examinations

Teaching Support

Documentaries, multimedia, presentations, slides, lab will be used.

Resource List

International lower Secondary Science 5
Science smart 4 and 5

GLOSSARY OF TERMS:

	Term	Description of meaning
1.	Classify	to group things based on common characteristics
2.	compare	to identify similarities and differences between objects, concepts or processes
3.	construct	to put a set of components together, based on a given plan
4.	describe	to state in words (using diagrams where appropriate) the main points of a topic
5.	Discuss	to reflect on and explore a topic in speech or writing
6.	differentiate	to identify the differences between objects, concepts or processes
7.	identify	to select and/or name the object, event, concept or process
8.	Infer	to draw a conclusion based on observations
9.	investigate	to find out by carrying out experiments
10.	List	to give a number of points or items without elaboration
11.	manipulate	to control an object in order to explore and discover its behavior
12.	measure	to obtain a reading from a suitable measuring instrument
13.	recognize	to identify facts, characteristics or concepts that are critical to the understanding of a situation, event, process or phenomenon
14.	Relate	to identify and explain the relationships between objects, concepts or processes
15.	show an understanding	to recall information (facts, concepts, models, data), translate information from one form to another, explain information and summarize information
16.	State	to give a concise answer with little or no supporting argument
17.	Trace	to follow a path