Dawood Public School
Course Outline 2016-17
Science
Class V

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

AIMS:
The Science Syllabus aims to:
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

OVERVIEW
MONTHLY SYLLABUS:

Months	Contents
August	Keeping Healthy. Respiratory System (MY Pals Are Here 5A). Diseases and injuries (MY Pals Are Here 5A).
September	Gases all around Finding Density, Mass and Volume of regular objects.
October	Sounds all around Pollution (MY Pals Are Here 5A).
November	Revision for Mid Term Examination 2015
December	**Mid Term Examination 2015**
January	Discovering plants Photosynthesis (MY Pals Are Here 5A).
February	Electricity Electric Circuits (MY Pals Are Here 5B).
March	Changing states of matter
April	Revision for Final Term Examination 2016
May	**Final Term Examination 2016**

August:

Keeping Healthy Chap 1 (page 1-14)
Respiratory System Unit 1(page 1-14) **(**MY Pals Are Here 5A).
Diseases and Injuries Unit 3 (page 27-38) (MY Pals Are Here 5A)

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.
- To identify the main parts of respiratory system and their functions.
- Explain the mechanism of breathing.
- Understand that a disease is an illness that can affect a person's health.
- 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 these units:

Circulation, contagious, non- contagious, blood vessels, heart, plasma, arteries, veins, capillaries, inhaled, exhaled, ribcage, windpipe ,air sacs ,addiction, antibiotics, antiviral, nicotine, tobacco, atrium, atria, ventricle, vena cava, septum, pulmonary artery and vein, oxygenated, deoxygenated, platelets, oxygen, carbon dioxide, caffeine, opium, heroine.

Contents	Learning Objectives	Activity	Resource
Circulatory system in the human body. Blood Blood vessels The Heart Pulse rate at rest and during exercise Parts of respiratory system Contagious and non-contagious diseases. Useful and harmful drugs.	Describe the circulatory system as a system of tubes with a pump and valves to ensure one-way flow of blood State the functions of blood red blood cells – hemoglobin and oxygen transport, white blood cells – antibody formation, platelets – causing clotting (Plasma – transport of blood cells, soluble nutrients, hormones and carbon dioxide. Describe the structure and functions of arteries, veins and capillaries. 11 List the components. Describe the structure of the heart including the muscular wall and septum, atria, ventricles, valves and associated blood vessels. Describe the function of the heart in terms of muscular contraction and the working of the valves. Investigate the effect of physical activity on pulse rate. Recognize the components of the circulatory system and know their functions.	Will name the major parts of the circulatory system. Will explain the working of the heart. Will making a sample of blood with the help of related objects. Will write riddles about the heart, lungs, oxygen, blood vessels, carbon dioxide or any other body concept that's been An appropriate video is a good introduction for studying the heart. Will show the demonstration of a dissection of an animal heart Will record the heart-beat through a stethoscope. Take a breath! (Board Game)	Heart, lung, artery, vein, capillary. Produce advice posters or power point presentations on taking care of your heart. Red beans **,**Corrn Syrup (light), Candy sprinkles , Box of white candy or jelly beans small mixing bowl tablespoon http://sumanasinc.com/webcontent/animations/content/humanheart.html goat, cow or chicken's heart stethoscope Pencils, Breath

Tobacco	Distinguish between contagious and non-contagious diseases, their causes, symptoms and preventions. Recognize the need to consult a doctor once a year or whenever necessary. Understand that drugs are substances that can change the functions of the body, especially 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.	Will make a simple model of a lung. Will look carefully through magazines and internet. Will collect pictures showing different contagious and non-contagious diseases. Hazards of smoking cigarettes. (Poster making activity)	Cards handout, faced dice, board game a clear plastic bottle ,plastic straw ,plasticine , balloon ,rubber band Magazines and Internet. Markers, crayons, colored pencils , Paper or poster board

<u>September</u>

Gases all around Chap 2 (PG 29-51)
Through this unit children will learn,

- Those gases are material and can be distinguished from solids and liquids by their properties.
- They also learn about the uses of some important gases and where gases are found
- Air content in soil and air as good insulator of heat.
- Children will understand why observations and measurements are needed.
- Harmful effects of some gases and global warming.

Recommended Vocabulary for this unit:

Noble gases, helium, neon, argon, oxygen, carbon dioxide, hydrogen gas, advertisement, laser lights, food conservation and packaging, breathing, global warming, greenhouse effect, combustion, volume, compressed, atmosphere, breathe, photosynthesis, incandescent, poisonous, insulator,

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. Changes in global weather patterns and climate over long periods of time.	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. To raise pupils' awareness of global warming (or global climate change). 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	Will measure mass and volume using appropriate apparatus. Will try to compress air in syringes or balloons. Give explanations in terms of trying to force things together. Will 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.	Weighing machine 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.

Air content in soil. Air as an insulator.	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.	energy savers game Will Identify good and poor insulators of heat with the help of different materials.	Dice, cards with questions, Wool, feather, bubble wrap, fur

<u>October</u>

Sounds all around Chap 5 (page 119 – 13)
Pollution Unit 11 (Page 121-130) (MY Pals Are Here 5A).
Through this unit children will learn,

- 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.
- Causes and effects of air, water and soil pollution.
- To identify and discuss sources of pollution.
- To keep the environment free of pollution.

Recommended Vocabulary for this unit:

Vibration, sound waves, pinna, ear canal, ear drum, hammer, anvil, stirrup, cochlea, auditory nerves, semicircular canals, balance, pitch, frequency, echo, communication, expression, reflect, pollution, haze, corrode ,biodegradable, rubbish, oil spills, deteriorate

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. Echo	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.) In music if we say a note is high or low, we are not talking about how loud it is. We are talking about its pitch.	Will Investigate how sounds are made. Mysterious magic 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, Perfect pitch Mystery noises Will Correcting common	Rulers, rubber bands, dried peas, containers e.g. yogurt cartons, test-tubes, cardboard tubes, metal rods etc. Rubber band, piece of plastic, large can, wood ruler, small can, salt plastic soda bottles, rubbing alcohol Jiggling coins, clinking glasses, clapping hands coins, chalkboard

Causes and effects of water pollution Causes and effects of air pollution Causes and effects of land pollution	Distinguish between pleasant and unpleasant sounds, high pitched end Unpleasant sounds. Define the term echo as a reflected sound. Identify and discuss different kinds of pollution. Identify and discuss sources of pollution. Discuss and explain why it is important to keep the environment free of pollution.	misconceptions about sounds. Activity on water pollution Activity on air pollution Activity on land pollution	erasers, pencil or pen , book paper or foil stapler, ball worksheet Clear container, jar, aquarium, clear plastic bowl, Water colors or food dyes. etc. Paper scraps (hole punch scraps are ideal), balloon sock and trash

November

Revision for midterm examination 2016

December

Mid Term Exam 2016

January

Discovering Plants Chapter 4 (Page 81-17)

Photosynthesis Unit 6 (Page 61-66) (MY Pals Are Here 5A)

Through this unit children will learn,

- Identify and describe the parts of a flowering plant.
- Differentiate between types of plants.
- Understand the life cycle of plants and what they need to grow
- Describe the needs of plants.
- To identify and understand the processes of pollination, fertilization, seed dispersal and germination
- Define the term photosynthesis.
- state the equation for photosynthesis using words and symbols
- describe how plants get their raw materials for photosynthesis
- describe how plants get their raw materials for photosynthesis

Recommended Vocabulary for this unit:

Pollination, fertilization, dispersal ,pollen ,ovule, germination, edible, fleshy, temperature, dicotyledonous,monocotyledon,reproduction,pollinators,stigma,style,ovary,filament,anther,stamen,
carpel,fusion,environment,nutrients,parachute,scatter,endosperm,embryo,photosynthesis,carbon dioxide, chlorophyll, oxygen, starch

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 To recognize that plants need light in order to grow well what happens to plants when they do not receive sufficient exposure to sunlight	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 fertilization. Observe pollen tubes using a microscope. Identify and understand the different types of seeds and their dispersal methods 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. Distinguish between monocotyledonous plants or monocots and dicotyledonous plants or dicots Understand the different stages of growth and development, from a seed to an adult plant To understand the process of photosynthesis by which plants use light energy, carbon dioxide and water to make food Demonstrate the effect of too little sunlight on plants in just a few days.	Will select locally occurring flowering plants, identify the different parts of the plant, including leaf, stem, roots, flower Cheeto Pollination Simulation Will identify and discuss the difference between wind pollinated and insect pollinated flowers. Create a small booklet to show the stages of fertilization. The sultana game The seed sort Seed Anatomy Will observe soaked broad bean seeds with the help of hand lenses. seed germination with the fun science experiment Role play on photosynthesis Importance of Sunlight in Photosynthesis	Selection of locally occurring flowering plants. Photos may be substituted for live specimens. Selection of flowers from locally occurring plants, Hand lenses. fresh pollen grains, Brown paper bag with a flower on it and Cheetos inside. Wind-borne ,float on water, sticking to animal's body and edible seeds, small fan, towel, bowlof water A4papers,colors internet any seasonal fruit with big seed Different types of fresh and dried fruits Bean, corn and gram seeds, magnifiers

February

Electricity Chap 6 (pg 141 – 151)

Electric Circuits Unit 22(Pg) **(**MY Pals Are Here 5B)

Through this unit children will learn,

- 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.
- Differentiate between series and parallel circuit.
- Recognize that circuits can be represented by drawing and conventional symbols.
- To identify the components of an electric circuit and to construct it.
- Identify ways to make bulb brighter and dimmer.

Recommended Vocabulary for this unit:

Charge, positive, negative, insulator, attraction, repulsion, static, electron, proton, neutron, attract, repel, neutral, humid, electrical appliances, fuels, coal, crude oil, natural gas, generate,series,parallel,components,dimmer,brighter,symbols,switch,battery.

Contents	Learning Objectives	Activity	Resource
What is static electricity Uses of static electricity Using and saving Electricity Construct circuits Distinguish between series and parallel circuits and state their advantages and disadvantages	Describe static electricity and the concept of charges. 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. To understand the flow of electrons How can the battery give energy to the light bulb in order to create light?" To understand the construction, structure, uses advantages and disadvantages of series and parallel circuits.	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. Role play on electricity Construction of circuits	Plastic rulers, balloons, plastic rods, pieces of cloth e.g. duster/T-shirt, comb Charts with pictures drawn on them, tennis balls Batteries, battery holder, bulb holders, bulbs, connecting wires

March:

Changing States of Matter Chap 4 (page 55 – 73)

Through this unit children will learn,

- Identify the states of matter.
- To describe the changes they encountered when the water was heated or cooled.
- Understand the phenomena of evaporation, freezing, condensation, boiling and melting.
- Explain the water cycle.

Recommended Vocabulary for this unit:

Melting, boiling, freezing, condensation, evaporation, water cycle, precipitation, condense, filtration, distillation, water vapors, humidity, surface area of contact, temperature, reversible reaction, condenser, heat loss, heat gain, diseases, polluted water.

Contents	Learning Objectives	Activity	Resource
Changes of state When water loses heat (freezing and condensation) When water gains heat (melting, boiling, evaporation)	Differentiate between the three states of matter (solid, liquid, gas) in terms of shape and volume Recognize 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)	Particle Dance Party Ice Cube Meltdown Freezer Pops 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 (popsicles making) when water is heated, it boils and changes to steam at 100^oC when steam is cooled, it condenses to water	Students Bag of ice cubes, cups as water, milk, juice, rubbing alcohol, saltwater labeled cups Thermometers, heating apparatus (e.g. Bunsen), Ice, beakers, thermometers, heating apparatus (e.g. Bunsen).
The water cycle and its importance. Purifying and treating water	Recognize the importance of the water cycle. Recognize 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.	Create a water cycle replica using hands-on materials Observing water cycle through demonstration.	

April
Revision for final exams

May
Final Examinations

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

Resource List
International lower Secondary Science
My pals are here (5-A, 5-B)

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