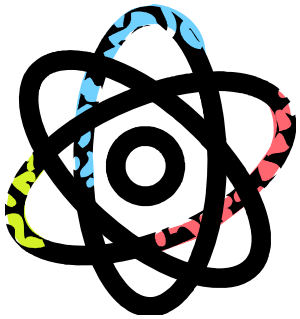
SCIENCE – GROUP 4



6 WEEK PLAN

11 SEPTEMBER - 11 NOVEMBER

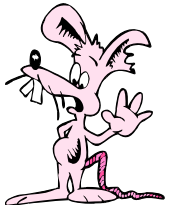
Staff members:

- **Shaun**
- **Desire**
- **Martin**
- **Larry**
- **Adam**
- **Wayne**
- **Clara**

Lab-assistants: Jose and Jenifer

Al Jazeera Academy Science Department: Programme of Study (11 Sept – Nov 2011)

Year Group	Topics Covered	Knowledge and content	Key skills taught	Useful Websites / Books used	What will we test?	How can we help?
Year 7: Science 	**Biology- Cells and how to work with a microscope** **Chemistry- States of matter**	**What a living organism is** **What organ systems are and what it is made up of** **MRS GREN** **Differences between solids, liquids and gas.** **What diffusion is?** **What affects the states of matter?**	**Setting up a microscope** **Making of slides** **Labelling diagrams of plant and animal cells.** **How to distinguish between solids, liquids and gas.** **How to do research and present a presentation on their findings.**	**Exploring Science 7** **KS3 Bite size.co.uk**	**The knowledge of cells, organs and organ systems** **Practical assessment on how to work the microscope and how to prepare slides** **Written test on all the content.** **Project on how Global Warming affects the states of matter by looking at the habitat of the Polar Bear.**	**Get the text books please**
Year 8: Science 	**Food** **Respiration** **Microbes**	**What's in our food?** **How do we keep going?** **The good, the bad and the ugly.**	**Food Tests** **Oxygen is needed by animals and CO2 for plants** **Making agar plates and viewing under a microscope**	**Exploring Science 8**	**Lab Practical – Food Tests** **Test Respiration**	**Introduce new science Vocab**

Year 9: Science 	**The Living World of Plants**	**Photosynthesis. Aerobic respiration. Leaf anatomy. How the plant uses glucose. Plant nutrition. Carbon cycle. Effects of deforestation. Global warming**	**Testing a leaf for starch. How to avoid plagiarism when writing a science project.**	**Exploring Science 9.** **http://video.google.com/videoplay?docid=-2496053087471410950#** **http://www.youtube.com/watch?v=3nRVZPJdXOo&feature=player_embedded** **http://woodchurchscience.edublogs.org/files/2008/03/photosynthesis-flash.swf**	**A project will test communication skills, knowledge of content and explaining how plants benefit society.**	**Reinforce work done by focusing on important terms on a regular basis and assessments after of during the topics covered.**
Year 10: Chemistry 	**Particle and Purification Atoms, elements, etc. Structure and bonding**	**How do we physically separate mixtures What many up materials How are things held together**	**Purification Techniques Atomic #, Mass number, isotopes, metals non-metals, bonding**	**Chemistry for IGCSE**	**Written test – past IGCSE papers Practical**	**Provide IGCSE based work and exam P.T. familiarity with IGCSE question related to these topics**

Year 10: Biology 	**Classification**	**Why do we classify? How do we classify? What is the binomial system? Name the different classification groups? Classify Arthropods and the 5 main classes of vertebrates? Classify Fungi, Viruses and**	**Draw and label. Know how the classification system works. 5 classes of vertebrates. Phylum Arthropods and its classes. How they differ. How do flowering plants differ?**	**Biology for IGCSE Modules notes Student notes Practical investigations Bite size.co.uk**	**Drawings Definitions Functions Differences and common features in plants Classify arthropods, Flowering plants, Vertebrates, Fungi, viruses and bacteria. Compare features**	**Reinforce work done by focusing on important terms on a regular basis and assessments after of during the topics covered**

Year 10: Physics 	**Electric Charge** **Electrical Energy**	**Bacteria** **What is the difference between mono and dicotyledons?** **Static electricity, charge, insulators, conductors, current (Q = It).** **Emf, pd, resistance, Ohm's Law (V=IR), electrical power (P = IV).**	**Building circuits in series in parallel.** **Reading ammeters and voltmeters.** **Creating graphs from data table.** **Using graphs to determine values by calculating the gradient.**	**IGCSE for physics** **Phet simulations**	**Past paper questions to test knowledge.** **Paper 1 questions, Paper 2 and 3 questions. Paper 6 questions to test experimental skills.**	**Offer solutions to many different kinds of problems.** **Allow students to spend a lot of time with the circuit equipment.**
Year 11: Chemistry	**Making and identifying Salts** **Test for**	**Using precipitate formation to identify**	**Lab techniques**	**Chemistry for IGCSE**	**Practical test: identifying cations** **Project: Chemicals involved in global**	**Review of many experiment techniques,**

	**cations Test for Anions**	**cations/anions**			**warming**	**Show connection with paper 6 in exam**
Year 11: Biology 	**Respiration** **Gas Exchange**	**Why needed? Difference between Aerobic and Anaerobic respiration?** **Why important? How will**	**Know the different equations. Processes which needs energy.** **Features of an effective gas**	**Biology for IGCSE Power points Modules notes Practical work** **Biology for IGCSE Power points Modules notes**	**Identify the correct equations. Why is respiration so important** **Do they know the different structures and their functions**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations** **Help to reinforce learning by**

		respiration link with gas exchange?	exchange system Label and functions of different structures involved in gas exchange.	Practical work	The link between respiration and gas exchange. The importance of gas exchange	homework, class work, tests and focusing on important terms and practical investigations
	Excretion	Why necessary? What does it mean? Difference between Excretion, Egestion and Secretion? Ways in which waste products leave the body?	Identify different methods of excretion Draw and label the kidney. Kidney function Urine formation	Biology for IGCSE Power points Modules notes Practical work	Definitions The way the kidney Functions How the kidney machine works	Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations
	Homeostasis	What does it mean? Why necessary? Examples of Homeostasis ?	Where in the body will homeostasis take place The involvement of the skin and blood vessels in the process.	Biology for IGCSE Power points Modules notes Practical work	Examples of homeostasis in the human body Involvement of the skin and blood vessels during this process.	Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations

	Coordination and Response	**What are the main parts of the nervous system?** **How do the neurons and reflex arcs function?** **Define antagonistic muscle working?** **What is the importance of our sense organs?**	**Negative effect if homeostasis does not take place.** **Know our definitions Nervous system and the way it works.** **Label and functions** **Drawing skills** **Importance of homeostasis** **Importance of antagonistic**	**Biology for IGCSE** **Power points** **Modules notes** **Practical work**	**Definitions** **Functions** **Structure** **Antagonistic movement** **How do we use our senses**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations**
Year 11: Physics 	**Electric Charge** **Electrical Energy**	**Static electricity, charge, insulators, conductors, current (Q = It).** **Emf, pd, resistance, Ohm's Law (V=IR), electrical power (P =**	**Building circuits in series in parallel.** **Reading ammeters and voltmeters.** **Creating graphs from data table.** **Using graphs to determine values by**	**IGCSE for physics** **Phet simulations**	**Use IGCSE questions to test knowledge.** **Study research questions and connect applications to the real world.** **Design an experiment, process the data and work with the equipment.**	**Offer solutions to many different kinds of problems.** **Allow students to spend a lot of time with the circuit equipment**

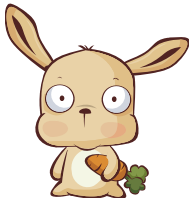
		IV).	**calculating the gradient. Designing experiments in the MYP format.**			
Year 12 (AS level) **Biology** 	**Cell Structure**	**Why cells? What is microscopy? How do Animal and plant cell differ? There common features? The difference between a light and electron microscope? Definition of Tissue and organs? How do we go from cell to become an organism?**	**The importance of cells They have differences and common features The way the function and the organelles they have Scale bar magnifications Measuring using a microscope.**	**AS and A level Biology Power points Modules notes Student notes Practical work**	**Drawing skills Definitions Practical skills Calculations during cell measurement**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations**
	Biological molecules	**Cells, our building blocks, why? Define polymers, monomers and macromolecules Structure and function of carbohydrates,**	**The importance of cells. Define important terms. Role of C, P and lipids in the human body. Water important for our survival. Organic ions and our health.**	**AS and A level Biology Power points Modules notes Student notes Practical work**	**Important terms Knowledge of C, P and lipids. Importance of water and inorganic ions.**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and**

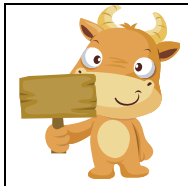
		protein and lipids? Why is water and organic ions important?				practical investigations
	Enzymes Time will also be spent of practical investigations. (microscope work and food test)	Define the term enzyme? Define the term activation energy? Explain the time course of an enzyme? How will temperature and pH affect enzyme working? Define competitive and non competitive inhibition.	The role of an enzyme in digestion. How it breakdown larger molecules and its importance. Factors affecting enzyme working. Enzyme inhibitors, how do they function?	AS and A level Biology Power points Modules notes Student notes Practical work	Definitions Role of enzymes Importance as part of digestion. Factors influencing enzyme function	Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations
Physics 	Physical Quantities and units, Measurement techniques, Kinematics, Work-energy-power	Students should know the relevant units and measuring techniques. They need to apply the	Taking measurements and using a variety of lab equipment	Textbook. Simulations available at: http://phet.colorado.edu/en/simulations/category/physics	All aspects of content and knowledge	Encourage students to read and re-

		equations of motion, Newton's laws, recall and apply formulae for work, energy and power.				**read the text. Work all problems in the text. Ask questions about any vocabulary if they are uncertain about its meaning**
Year13 (IBDP) **Biology** 	**Digestion (SL)**	**Why must digestion take place?** **Define the term digestion?** **What is the role of enzymes in digestion?** **If which way is enzymes sensitive to pH and temperature changes?** **Define terms such as absorption and assimilation?** **Explain the role of the villi in the absorption.**	**Draw and label structures.** **Know specific terms.** **How enzymes work.** **Factors affecting enzyme working.** **Villi function.**	**Biology 3rd Edition** **Study guide** **Student notes** **Power points** **Practical work**	**Do they know the important terms?** **Do they understand the working of the alimentary canal and the parts in which enzymes will function at there optimum?** **Know the functions of different structures forming part of the alimentary canal.** **What are the secondary structures working alongside the alimentary canal?**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations**
	Transport System (SL)	**Label the heart?** **Know the functions of**	**Draw and label the heart.** **Identify the different blood vessels and**	**Biology 3rd Edition** **Study guide** **Practical work** **Power point** **Student notes**	**Knowledge of blood flow through the heart.** **Different blood vessels involved, there structure and function.**	**Help to reinforce**

	Defence against Disease (SL & HL)	**the different parts?** **Name the route which the blood will flow as it goes through the heart?** **Name the different blood vessels.** **Define a pathogen?** **Will antibiotics be able to destroy bacteria and viruses?** **What is the role of the skin and mucus membranes in defending our body?** **How will phagocytes and leucocytes fight diseases?** **What is the difference between a antigen and a antibody?** **Define antibody production?** **What are the**	**know there functions.** **Understand how the heart beats.** **Contents of blood.** **Know definitions** **Identify different types of white blood cells** **How do they fight pathogens?** **The involvement of the skin and mucus membranes.** **Difference between antibodies and antigens.** **HIV, cause, transmission and prevention.** **Know the blood clotting process.** **The immune response.** **Active and passive immunity** **Vaccinations, its benefits and dangers**	**Biology 3rd Edition** **Study guide** **Practical work** **Student notes** **Power point**	**What makes up blood?** **Definitions** **Blood clotting process** **The immune response** **Vaccinations**	**learning by homework, class work, tests and focusing on important terms and practical investigations** **Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations**

	Gas exchange **We will spend one week,**	**effects of HIV on the body?** **Name ways in which HIV can be transmitted?** **Describe blood clotting?** **Define clonal selection and memory cells?** **Difference between clonal selection and clonal expansion?** **Define active and passive immunity?** **Explain antibody production?** **Describe the vaccination process benefits and dangers?** **What is gas exchange?** **Define ventilation and cell respiration?** **Explain the ventilation system?**	**What are gas exchange and its importance in sustaining human life?** **The link between gas exchange and cell respiration.** **The features on the gas exchange surface area.** **How your lungs are ventilated?**	**Biology 3rd Edition** **Study guide** **Practical work** **Student notes** **Power point**	**Definitions** **Draw, label and functions regarding the respiratory tract** **Features making the gas exchange area efficient.** **How your lungs are ventilated by muscle movements.**	**Help to reinforce learning by homework, class work, tests and focusing on important terms and practical investigations**

Physics 	**where we will only focus on Internal assessments to add hours to there 4PSOW.** **Fields, Forces, and electromagnetic induction. Nuclear structure and Quantum physics**	**Describe the features of the gas exchange surface area? Label and give the function of the parts found in the ventilation system? Define inspiration and expiration?** **Students will understands the three forces at a distance and be able to make calculations using the appropriate formulae. Students will be familiar with the basic structure of the atom and be able to explain the**		**Textbook.** **Simulations available at: http://phet.colorado.edu/en/simulations/category/physics** **http://gradegorilla.com/international.php**	**All aspects of content and knowledge**	**Encourage students to read and re-read the text. Work all problems in the text. Ask questions about any vocabulary if they are uncertain about its meaning**
Chemistry	**SL Energetics**			**Textbook John Green and SandruDamji – 3rd Edition**	**All SL topics before Eid vacation**	

	**SL Kinetics** **SL Equilibrium** **SL Acids and Bases**	**fundamental concepts of Quantum Theory** **How all the chapters are linked to better understand the content in each chapter**	**Laboratory techniques** **Test taking skills**			**Practicing past papers questions and reinforce their understandin g from the papers**