Al Jazeera Academy Science Department: Programme of Study (Nov 2011 to December 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 	Chemistry- States of matter	Differences between solids, liquids and gas. What diffusion is? What affects the states of matter?	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	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.	Sort the timetable out please
	Physics- Energy Resources and elctricity	Renewable and non renewable resources Differences between parallel and series circuits Components of an electrical circuit	How to distinguish between renewable and non renewable energy resources Setting up and drawing of electrical Circuits		Written test Practical (Informal Assessment)	

Year 8 	Living thing classification, Microbes	How are animals grouped, We are always under attack	Using keys to help group animals Making agar plates and viewing under a microscope	Exploring Science 8	Lab Practical – Key classification poster, Bacteria preparation and microscope viewing Test: Classification	Introduce new science Vocab
Year 9  **YEAR 10**	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.	Using class discussion, focus on important terms, classwork and homework, research projects and practical investigations
						
Physics	Electric Circuits Magnetism	Parallel and Series Circuits Sensor	Calculate I,V and R in series and	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

		circuits Switching circuits Magnetic properties Magnetic fields	parallel. Understanding sensor, swith and time-delay circuits.			of problems. Allow students to spend a lot of time with the circuit equipment. Extra help after school offered
Chemistry	Formulae and Equations, Chemical calculations	How do we abbreviate in chemistry by using symbols and formulae, Calculating empirically values using mole etc	Using knowledge of charge to be able to written formulae for compounds, Calculate quantities, % yields, volumes of gases with you knowledge of the mole	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
Biology	Cell Structure Movement In and Out the Cells	How do we differentiate between animal and plant cells, between diffusion and active transport, and osmosis	Laboratory skills: osmosis lab with onion, potatoes	IGCSE Biology Textbook IGCSE Review book	Written test – past IGCSE papers	Written test – past IGCSE papers

Year 11  **Biology**	Coordination and Response	Nervous control in Humans Neurons and reflex arcs Reflexes and antagonistic muscles Sense Organs The Eye Hormones Drugs Reproduction in Plants	Definitions Labels and functions Drawings Identify parts Practical skills	Biology for IGCSE Bite size (website) Student notes Power point Worksheets	Function of the nervous system How a reflex arcs functions The function of sense organs Function of hormones Drugs and its affect Reproduction in Plants	Give homework, classwork, class discussion, worksheets and practical investigations
Physics	Electric Circuits	Parallel and Series Circuits Sensor circuits Switching circuits	Focus on experimental skills such as designing and conducting experiments. Calculate I,V and R in series and parallel. Understanding sensorswith and a time-delay circuits.	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. Extra help after school offered.

Chemistry	Metals and their reactivity, decomposition, Metal extraction	See how metals that are around us often are purified from their ores, Properties of these metals, Properties and manufacture of alloys	Reactions are related to their position on reactivity series, the complex process of metal extraction.	Chemistry for IGCSE	Written test. Of past IGCSE papers	Indicate the predominant question that are often repeated (IGCSE) from the section.
<u>Year 12</u> (AS level)  **Biology:**	Enzymes Cell membranes and transport Genetic control of protein structure and function	Measuring reaction rate Enzyme Inhibitors Structure of DNA and RNA DNA replication DNA,RNA and protein synthesis	Definitions Labels and functions Drawings Identify parts Practical skills	AS level Biology Student notes Power point Worksheets	Rate at which enzymes function The influence of enzyme and substrate concentration Structure and function of the cell membrane The production of protein DNA and RNA function and structure.	Give homework, classwork, class discussion, worksheets and practical investigations

Physics	Work, energy and power; forces and collisions; Work on closed systems; Eelectric circuits. Waves.	Students should know the relevant units and measuring techniques. They need to apply the relavantequations .	Using a variety electrical 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-read the text. Work all problems in the text. Ask questions about any vocabulary if they are uncertain about its meaning.
Year13 (IBDP)  **Biology**	Human Health and Physiology	Reproduction Nerves, Hormones and Homeostasis Muscles and movement The Kidney	Definitions Labels and functions Drawings Identify parts Practical skills	IB Biology Student notes Power point Worksheets	Draw and label the reproductive systems The function of the nervous system and movement using muscle working The Kidney structure and its function	Give homework, classwork, class discussion, worksheets and practical investigations

Physics	Astro physics and Nuclear structure with Quantum physics	Students will understand the relevant concepts for Astronomy and make calculations using the appropriate formulae. Students will be familiar with the basic structure of the atom and be able to explain the fundamental concepts of Quantum Theory	Students will complete all lab work for the course	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 Oxido Reduction HL Energetics HL Kinetics HL Equilibrium 5/6 of IA	How all the chapters are linked to better understand the content in each chapter and the HL section	Laboratory techniques Test taking skills: 5/6 of the IA will be done before the break	Textbook John Green and SandruDamji – 3rd Edition	All SL +HL covered topics	Practicing past papers questions and reinforce their understanding from the papers