



# ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

SCIENCE YEAR - 9

2019 - 2020

A guide for Parents and Students

Overview of the year:

The national curriculum for science aims to ensure that all pupils develop scientific knowledge and conceptual understanding through the specific disciplines of Science.

- **Biology** – Structure and Function of Living Organisms: Health & drugs, Genetics & evolution: Variation, Inheritance, Genes and chromosomes.
- **Chemistry** - Chemical Reactions: Exothermic and Endothermic reactions, catalysis, Materials: Extraction of Copper and Iron, Polymers, composites and ceramics, Energy: Energy changes and transfers, Earth and Atmosphere: Structure of Earth and rock cycle, Reactivity series in Periodic Table.
- **Physics** – Forces & Motion: Distance-Time graphs, Gravitational field strength, Motion in Solar system, Waves - Light.
- **Working Scientifically** – Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate. Make and record observations and measurements. Present observations interpret observations and data.

<p><b>TERM ONE</b></p> <p>Main topic, skills and content:</p>	<ul style="list-style-type: none"> <li>• <b>Chemical Reactions</b> - Chemical equations, symbols of compounds, Exothermic and Endothermic c Explain the energy changes taking place during an exothermic and endothermic reactions.</li> </ul>	<p>SECRET</p>	<p><b>ASSESSMENTS:</b></p> <p><b>Formative assessment 1</b> Exothermic &amp; Endothermic reactions, Interpreting speed distance time graph</p> <p><b>Date: 29-30<sup>th</sup> September.</b></p> <p><b>Common site for Science</b> <a href="https://www.bbc.co.uk">https://www.bbc.co.uk</a> <a href="https://www.teachitscience.co.uk/KS3.Science">https://www.teachitscience.co.uk/KS3.Science</a> <a href="http://links4science.blogspot.com">http://links4science.blogspot.com</a> <a href="https://www.tes.com">https://www.tes.com</a></p>
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	<p>• <b>Forces and Motion</b> – Speed, Distance, Time, Graphs, Gravitational Field, Motion in Solar System</p> <p>Analyze distance–time data, interpret data and apply ideas about motion to the context of ferry and train travel.</p> <p>• <b>Genetics and Evolution</b> – Variation &amp; Inheritance, Natural Selection, Selective Breeding</p> <p>Explain the variation between individuals or within a species being continuous or discontinuous, to</p>	<p><b>Research</b> (Self Managers, Effective Organizers, Reflective Learners, BYOD in class)</p> <p>Imagine you are a reporter and How do you think the camera from RTA captures the vehicles that are over speeding? Present this as a reporter in front of your class</p> <p>Assessed based on their presentation</p> <p><a href="https://www.emirates247.com/news/emirates/dubai-speed-radars-5-facts-you-didn-t-know-could-save-you-cash-2014-11-24-1.571090">https://www.emirates247.com/news/emirates/dubai-speed-radars-5-facts-you-didn-t-know-could-save-you-cash-2014-11-24-1.571090</a></p> <p>BYOD(Reflective learner, Self Manager) – Research on Pros and Cons of Selective breeding</p> <p><a href="https://connectusfund.org/14-most-notable-pros-and-cons-of-selective-breeding">https://connectusfund.org/14-most-notable-pros-and-cons-of-selective-breeding</a></p>	<p><b>Curricular test-</b> Unit chemical reactions, Force &amp; Motion, Genetics &amp; Evolution – Variation and its types</p> <p><b>Date:</b> 20-24<sup>th</sup> October</p>
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	<p>include measurement and graphical representation of variation. Explore examples of natural selection and selective breeding.</p> <ul style="list-style-type: none"> <li>• <b>Earth and Atmosphere</b> <ul style="list-style-type: none"> <li>– Structure of earth, Types of Rocks, Rock Cycle, Structure and composition of Earth</li> <li>Describe the rock cycle and the formation of igneous, sedimentary and metamorphic rocks.</li> </ul> </li> </ul>		<p><b>Formative Assessment 2</b> – Interpreting and identifying the rocks and its properties Nov 3<sup>rd</sup> -6<sup>th</sup></p> <p><b>Winter exam</b> <b>Units:</b> All units covered in Term 1. <b>Date:</b> 17-21 November</p>
<p><b>TERM TWO</b> Main topic,</p>	<ul style="list-style-type: none"> <li>• <b>The periodic table</b> - Reactivity Series,</li> </ul>	<p>BYOD –(Self manager,, effective learner, Reflective learner)</p>	<p><b>ASSESSMENTS:</b> <b>Formative assessment 1:</b> Reactivity series &amp; Materials Jan 26-30</p>

<p>skills and content:</p>	<p>Atomic structure, Describe the structure of atom, Properties of group 1, 7 and 0 elements Use evidence to identify the reactivity series of metals. Recognize the order of metals and carbon in the reactivity series.</p> <p>• <b>Materials</b> - Extraction of Iron and Copper Represent displacement reactions with carbon and metal oxides using formulas and equations. Explain how copper and iron are extracted from their ores using carbon.</p>	<p>Extraction of metals (any one) by electrolysis method</p> <p><a href="http://todhigh.com/clientandbuilds/WordPress/wp-content/uploads/2018/03/Extracting-Metals-by-Electrolysis.pdf">http://todhigh.com/clientandbuilds/WordPress/wp-content/uploads/2018/03/Extracting-Metals-by-Electrolysis.pdf</a></p>	<p>Curricular test: Topic: Reactivity series, Materials and Genetics &amp; Evolution <b>Feb 9-13</b></p> <p><b>Formative assessment:</b> Topic: Light waves <b>Date: 25<sup>th</sup> March</b></p>
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	<p>• <b>Genetics and Evolution</b> – Chromosomes and genes Identify that the nucleus contains chromosomes which carry inherited genetic information. Explain that chromosomes are made of genes containing DNA, and describe the structure of DNA. Assess the work of Watson, Crick, Wilkins and Franklin on DNA structure.</p>	<p><b>BYOD</b>(Self Manager, Effective Organizer, Reflective Learner, <b>BYOD</b>) Causes and effect of any 5 genetic diseases linked with chromosomes and present it in the class Assessed based on the information gathered and explanation</p> <p><a href="https://www.medicinenet.com/genetic_disease/article.htm">https://www.medicinenet.com/genetic_disease/article.htm</a></p>	
	<p>• <b>Waves</b> – Light, Properties, Reflection, Refraction, Coloured Light Describe light as</p>	<p><b>BYOD</b> (Self Manager, Reflective learner) Uses of concave and convex lens and how they are used</p>	

	<p>travelling in waves. Explain properties of light – absorption, reflection, refraction and dispersion.</p> <p><b>Space physics-</b> Galaxies, Seasons, Earth’s tilt, Measuring distance in universe using light year</p> <p>Describe how light years can be used to measure distance in Universe, Explaining the effects of Earth’s motion, Relate ideas about gravitational fields to the Sun–Earth–</p>	<p>to focus an object <a href="https://www.edantu.com/physics/concave-and-convex-lens">https://www.edantu.com/physics/concave-and-convex-lens</a></p>	
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	Moon system.		
<p><b>an TERM THREE</b></p> <p>Main topic, skills and content:</p>	<ul style="list-style-type: none"> <li>• <b>Energy</b> – Energy Transfer, Calculation of fuel costs, food values, Power rating Explain how the cost of energy used can be calculated, Thermal conduction, radiation</li> <li>• <b>Earth and Atmosphere</b> – Earth as limited</li> </ul>	<p><b>Research enquiry project –</b></p> <p>The students are required to compare fuel prices in UAE and basic food items for the past 10 years and make a comparison with the change in income of a middle class family within the same period of time.</p> <p>The project requires the students to be <b>creative thinker</b> and enhance the <b>enquiry</b> and <b>research skills</b>, collecting and analysis of data makes them <b>self-managers</b> and <b>effective organizers</b>. Comparison of the individual works of different sets of students and the analysis promotes <b>team building</b>.</p> <p>Assessed based on the comparison and interpreting data <a href="https://www.thefuelprice.com/Fae/en">https://www.thefuelprice.com/Fae/en</a></p> <p><b>Report on Carbon footprint after Researching (Self</b></p>	<p><b>ASSESSMENTS:</b></p> <p><b>Formative Assessment 1- Interpreting carbon cycle</b></p> <p><b>Formative Assessment 2- Health &amp; drugs and effect of smoking</b></p>



	<p>source of materials, Carbon Cycle State how Earth has limited resources and the efficacy of recycling. Describe the carbon cycle. Explain how human activity increases the amount of carbon in the atmosphere . Explain what is meant by a 'carbon footprint'.</p> <p>• <b>Structure and function of Living Organisms</b> - Health and Drugs Explain the effects of recreational drugs (including substance misuse) on behaviour,</p>	<p><b>Manager, Enquirers, Effective Organizer, BYOD)</b></p> <p>Compare the carbon footprint between developed and developing countries and action taken to reduce the amount of carbon</p> <p>Assessed based on the comparison and interpreting data</p>	<p><b>Final exam:</b> All the topics <b>Dates: May 31-4<sup>th</sup> June</b></p>
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	<p>health and life processes.</p> <ul style="list-style-type: none"><li>• <b>Materials</b> – Polymers, Ceramics and Composites Describe the properties and uses of Polymers, Ceramics and Composites.</li><li>• <b>Chemical Reactions</b> – Catalysis Explain how catalysts work.</li></ul>		
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