



ARAB UNITY SCHOOL

CURRICULUM OVERVIEW

YEAR 10

2019 – 2020

# A guide for Parents and Students

SUBJECT: IGCSE Chemistry

Year: 10

## Syllabus aims

The aims are:

1. Provide an enjoyable and worthwhile educational experience for all learners, whether or not they go on to study science beyond this level
2. Enable learners to acquire sufficient knowledge and understanding to:
  - become confident citizens in a technological world and develop an informed interest in scientific matters
  - be suitably prepared for studies beyond Cambridge IGCSE
3. Allow learners to recognize that science is evidence based and understand the usefulness, and the limitations, of scientific method
4. Develop skills that:
  - are relevant to the study and practice of biology – are useful in everyday life – encourage a systematic approach to problem solving – encourage efficient and safe practice – encourage effective communication through the language of science
5. Develop attitudes relevant to biology such as:
  - concern for accuracy and precision – objectivity – integrity – enquiry – initiative – inventiveness
6. Enable learners to appreciate that:
  - science is subject to social, economic, technological, ethical and cultural influences and limitations – the applications of science may be both beneficial and detrimental to the individual, the community and the environment.

<p><b>Term 1</b></p>	<p><b>1.PARTICULATE NATURE OF MATTER</b></p> <ul style="list-style-type: none"> <li>• Diffusion</li> <li>• Brownian motion</li> <li>• Kinetic theory of particles</li> <li>• Separation techniques- fractional distillation, chromatography, crystallization.</li> </ul> <p><b>2. ATOMS ELEMENTS AND COMPUNDS</b></p> <ul style="list-style-type: none"> <li>• Atomic structure</li> </ul> <p>Calculate protons electrons&amp; neutrons,Drawing electronic configuration,Isotopes</p> <ul style="list-style-type: none"> <li>• Chemical bonding-covalent, ionic bonding &amp; metallic bonding, bonding in macromolecules</li> <li>• Macromolecules- Diamond, graphite, SiO<sub>2</sub> structures</li> </ul> <p><b>3.PERIODIC TABLE</b></p> <ul style="list-style-type: none"> <li>• Periodic table</li> </ul>	<p><b>Research work</b></p> <p><b>Independent Project Work 1-December 5 th</b></p> <p><b>Timeline for the evolution and invention of the smallest particles (from atoms to subatomic particles)</b></p> <p>The data entry of journey facilitates the students to be <b>self-managers</b>. In order for successful data collection they will have to stay organized the entire time which in turn makes them <b>effective organizers</b>. The project itself makes the students <b>creative thinkers</b> with lot of innovation incorporated. The students remain to be <b>reflective learners</b> as the project done for the unit learned will be constantly used and knowledge applied. The <b>enquiry skills</b> of the student will help them analyze the graph successfully for calculation of requisite quantities.</p> <p>The students are required to submit the projects on or before <b>Dec 11 th</b>.</p> <p><b>Activities</b>  <b>Science Works &amp;Activities- 24th Sep</b>  <b>Debate (Classroom)-8Th oct</b></p>	<p><b>Curricular test</b></p> <p>A test will be conducted between the week of <b>20-24 October 2019</b> to ensure continuous learning among the students. All topics covered till the previous week to that will be included for the test. 30% of the curricular test marks will be taken for the end of year grades. The test will on the following topics:</p> <ul style="list-style-type: none"> <li>• Particulate nature of matter</li> <li>• Atoms,</li> <li>• elements and compounds</li> <li>• Periodic table</li> </ul>
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	<ul style="list-style-type: none"> <li>• Periodicity of properties</li> <li>• Trends across periods and groups- Chemical and Physical properties</li> </ul> <p><b>Stoichiometry</b></p>	<p><b>29 th Oct-Buzzer round</b></p> <p><b>Field trip- 4Th Nov (Chemistry related)</b></p> <p><b>10th Nov-Jigsaw bonding</b></p> <p><b>26 TH Nov- Poster making</b></p> <p><b>5th Dec- Field trip (grade 10)</b></p> <p><b>Dec 8 th-Lab Activity (Extraction of Nicotine from Samples)</b></p>	<p><b>Winter Assessment (Tentative)- Nov18- Dec 9</b></p> <p><b>PORTIONS:</b></p> <p><b>PARTICULATE NATURE OF MATTER, ATOMS ELEMENTS AND COMPOUNDS, EXPERIMENTAL TECHNIQUES, PERIODIC TABLE, CHEMICAL BONDING, STOICHIOMETRY TILL MOLECULAR FORMULA</b></p> <p><b>Homework –</b></p> <p>Teachers will be assigning homework to the students as he/she sees fit on separation techniques.</p> <p>An example given here:</p> <ul style="list-style-type: none"> <li>• How do jewelers pearl of different sizes?</li> <li>• How are natural colors obtained?</li> </ul> <p>For given scenarios students are asked to use simulations of separation techniques for better understanding. Scope for <b>BYOD</b>.</p>
<p><b>Term 2</b></p>	<p><b>4.STOICHIOMETRY</b></p> <ul style="list-style-type: none"> <li>• Writing the chemical formulae</li> </ul>	<p><b>Research work</b></p>	<p><b>Curricular test</b></p>

	<ul style="list-style-type: none"> <li>Balancing of equations</li> <li>Net ionic equations</li> <li>Calculation of molecular mass, formula mass, empirical formula</li> <li>Calculation of moles-for solids, solutions and gases(rtp)</li> <li>Percentage purity</li> <li>Calculation of water of crystallization</li> <li>Limiting reagent</li> </ul> <p><b>5.CHEMICAL REACTIONS</b></p> <ul style="list-style-type: none"> <li>Chemical reactions - types of chemical reactions <ul style="list-style-type: none"> <li>Neutralization reaction</li> <li>Displacement reaction</li> <li>Double displacement reaction</li> <li>Combustion reaction</li> <li>Synthesis reaction</li> </ul> </li> <li>Heat of reaction- Endothermic, exothermic</li> </ul>	<p><b>26th Mar- Independent research project 2</b></p> <p><b>An overview various ways of water treatment, there by analyse the effective way by evaluating the pros and cons. (UAE reference is must)</b></p> <p>The data entry of journey facilitates the students to be <b>self-managers</b>. In order for successful data collection they will have to stay organized the entire time which in turn makes them effective <b>organizers</b>. The project itself makes the students <b>creative thinkers</b> with lot of innovations incorporated. The students remain to be <b>reflective learners</b> as the project done for the unit learned will be constantly used and knowledge applied. The <b>enquiry skills</b> of the student will help them analyze the graph successfully for calculation of requisite quantities. The students are required to submit the projects on or before <b>Apr 12- deadline project</b></p> <p><b>Activities</b></p> <p><b>28<sup>th</sup> Jan-Role play game(Grade10&amp;11)</b></p>	<p>A test will be conducted between the week of <b>9th-13<sup>th</sup> February 2019</b> to ensure continuous learning among the students. All topics covered till the previous week to that will be included for the test. 30% of the curricular test marks will be taken for the end of year grades. The test will be on the following topics:</p> <ul style="list-style-type: none"> <li>Bonding</li> <li>Stoichiometry</li> <li>Chemical energetics</li> </ul> <p><b>Spring Exams- Tentative Dates-(March1-12)</b></p> <p><b>Homework –</b></p> <p>Teachers will be assigning homework to the students as he/she sees fit.</p> <p>An example given here:</p> <p>Both diamond and graphite are pure forms of carbon, then why are they different in all aspects?</p> <p>For given scenarios students are asked to research about various type of <b>MACROMOLECULES</b> –SiO<sub>2</sub>, diamond, Graphite.....having giant covalent bonding.</p> <p>The simulations of structures can be used for better</p>
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	<ul style="list-style-type: none"> <li>• Rate of reaction-</li> <li>• Haber process,</li> <li>• Le chatlier's principle</li> <li>• Catalysts</li> </ul> <p><b>6.CHEMICAL ENERGETICS</b></p> <ul style="list-style-type: none"> <li>• Exothermic</li> <li>• Endothermic</li> <li>• Bond energy calculation</li> <li>• Energy profile diagram</li> </ul>	<p><b>Feb10 th-Problem Solving</b></p> <p><b>25th Feb- Use of ICT- (Grade10 &amp;11)</b></p> <p><b>Mar 17 th- Show &amp; tell Game(grade10&amp;11)</b></p>	<p>understanding. Scope for <b>BYOD.</b></p>
<b>Term 3</b>	<p><b>7.AIR &amp; WATER-</b></p> <ul style="list-style-type: none"> <li>• Preparation of gases</li> <li>• Fractional distillation of air</li> <li>• Water treatment</li> <li>• Pollutants</li> <li>• Rusting</li> <li>• Carbon cycle</li> <li>• Identification of gases</li> </ul> <p>SULPHUR &amp;NITROGEN –</p> <p>Contact process, acid rain, nitrogenous fertilizers</p> <p>CARBONATES-</p>	<p><b>Activities</b></p> <p><b>Snowball Activity-Apr 14th</b></p> <p><b>Fast Flash Activity-May 10 th</b></p> <p><b>Apr 12- deadline for project submission</b></p>	<p><b>GL progress tests from 3rd may- 4th jun</b></p> <p><b>10<sup>th</sup>-17th may-(grade10)</b></p> <p><b>Final end of year exams (1-18 June)-all units</b></p>

	Thermal decomposition of carbonates, limestone cycle, fertilizers		
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