

CURRICULUM SUMMARY – September to December 2019

SUBJECT: KS4 IGCSE Chemistry

YEAR GROUP: Year 11

TEACHER: Dr Kumi Osanai

Week	Dates	Learning objectives	Activities (in brief)
1	3 – 6 September	<p>1. Laboratory safety To able to understand the basic safety regulations when working in a laboratory. To be able to acquire how to handle any hazardous situation occurred in a laboratory.</p> <p>2. Common laboratory equipments To be familiar with common laboratory equipments and apparatuses and to be able to use safely.</p> <p>3. IGCSE Chemistry examinations and syllabus (June 2019)</p>	<p>Powerpoint presentation Workbook/worksheet Videos Mini test/quizzes Homework</p>
2	9 – 13 September	<p>4. Acids, bases and salts Describe the characteristic properties of acids as reactions with metals, bases, carbonates and effect on litmus and methyl orange. Describe the characteristic properties of bases as reactions with acids and with ammonium salts and effect on litmus and methyl orange. Describe neutrality and relative acidity and alkalinity in terms of pH measured using Universal indicator paper (Whole numbers only)</p>	<p>Powerpoint presentation Workbook/worksheet Videos Mini test/quizzes Homework</p> <ol style="list-style-type: none"> 1. Common acids and bases in a laboratory 2. Chemical reactions involving acids and bases
3	16 – 20 September	<p>Describe and explain the importance of controlling acidity in soil (Extended) Define acids and bases in terms of proton transfer, limited to aqueous solutions. Describe the meaning of weak and strong acids and bases.</p>	<p>Powerpoint presentation Workbook/worksheet Videos Mini test/quizzes Homework Practicals</p> <ol style="list-style-type: none"> 1. Conductivity of electricity in a strong and weak acid.
4	23 – 27 September	<p>Classify oxides as either acidic or basic, related to metallic and non-metallic character. (Extended)</p>	<p>Powerpoint presentation Workbook/worksheet Videos</p>

		Further classify other oxides as neutral or amphoteric.	Mini test/quizzes Homework Practicals 1. Demonstration – MgO is basic and SO ₂ is acidic
5	30 September – 4 October	Demonstrate knowledge and understanding of preparation, separation and purification of salts as examples of some of the techniques. (Extended) Demonstrate knowledge and understanding of the preparation of insoluble salts by precipitation. Suggest a method of making a given salt from a suitable starting material, given appropriate information.	Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework 1. Making a soluble salt 2. Making an insoluble salt
6	7 – 11 October	Chapter test Feedback on the chapter test	
7	14 – 18 October	5. The Periodic Table Describe the Periodic Table as a method of classifying elements and its use to predict properties of elements. Describe the change from metallic to non-metallic character across a period. (Extended) Describe and explain the relationship between Group number, number of outer shell electrons and metallic/non-metallic character.	Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework 1. History of the Periodic Table
8	21 – 25 October	Describe lithium, sodium and potassium in Group 1 as a collection of relatively soft metals showing a trend in melting point, density and reaction with water. Predict the properties of other elements in Group 1, given data, where appropriate. Describe the halogens, chlorine, bromine and iodine in Group 7, as a collection of diatomic non-metals showing a trend in colour and density and state their reaction with other halide ions. Predict the properties of other elements in Group 7, given data where appropriate.	Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework 1. Reactions of Group 1 metals with water (demo) 2. Displacement reactions between halogens and their halides.
	28 October – 1 November	Mid-Term Break	Mid-Term Break
9	4 – 8 November	Describe the transition elements as a collection of metals having high densities, high melting points and forming coloured compounds, and which, as elements and compounds, often act as catalysts.	Powerpoint presentation Workbook/worksheet Videos

		<p>(Extended) Know that transition elements have variable oxidation states.</p> <p>Describe the noble gases, in Group 8 or 0, as being unreactive, monoatomic gases and explain this in terms of electronic structure.</p> <p>State the uses of the noble gases in providing an inert atmosphere, i.e. argon in lamps, helium for filling balloons.</p>	<p>Chapter test/quizzes Homework</p> <ol style="list-style-type: none"> 1. Observing coloured transition compounds. 2. Determining oxidation states from polyatomic ions.
10	11 – 15 November	<p>Chapter test Feedback on the chapter test</p>	
11	18 – 22 November	<p>6. Metals and reactivity series List the general physical properties of metals. Describe the general chemical properties of metals, e.g. reaction with dilute acids and reaction with oxygen. Explain in terms of their properties why alloys are used instead of pure metals. Identify representations of alloys from diagrams of structure.</p> <p>Place in order of reactivity: potassium, sodium, calcium, magnesium, zinc, iron, (hydrogen) and copper, by reference to the reactions, if any, of the metals with:</p> <ul style="list-style-type: none"> - Water or steam - Dilute hydrochloric acid <p>And the reduction of their oxides with carbon. Deduce an order of reactivity from a given set of experimental results.</p>	<p>Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework Practicals</p> <ol style="list-style-type: none"> 1. Deduction of the reactivity series by chemical reactions 2. Small scale of extraction of metals from its compound using charcoal
12	25 – 29 November	<p>(Extended) Describe the reactivity series as related to the tendency of a metal to form its positive ion, illustrated by its reaction, if any, with:</p> <ul style="list-style-type: none"> - The aqueous ions - The oxides <p>Of the other listed metals. Describe and explain the action of heat on the hydrolysis, carbonates and nitrates of the listed metals. Account for the apparent unreactivity of aluminium in terms of the oxide layer which adheres to the metal.</p>	<p>Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework</p>
13	2 – 6 December	<p>Describe the ease in obtaining metals from their ores by relating the elements to the reactivity series. Describe and state the essential reactions in the extraction of iron from</p>	<p>Powerpoint presentation Workbook/worksheet Videos</p>

		<p>hematite. Describe the conversion of iron into steel using basic oxides and oxygen. Know that aluminium is extracted from the ore bauxite by electrolysis. Discuss the advantages and disadvantages of recycling metals, limited to iron/steel and aluminium. (Extended) Describe in outline, the extraction of zinc from zinc blende, Describe in outline, the extraction of aluminium from bauxite including the role of cryolite and the reactions at the electrodes.</p>	<p>Chapter test/quizzes Homework Practicals 1. Videos of iron/aluminium industry</p>
14	9 – 13 December	<p>Name the uses of aluminium: - in the manufacture of aircraft because of its strength and low density. - in food containers because of its resistance to corrosion. Name the uses of copper related to its properties (electrical wiring and in cooking utensils). Name the uses of mild steel (car bodies and machinery) and stainless steel (chemical plant and cutlery). (Extended) Explain the uses of zinc for galvanising and for making brass. Describe the idea of changing the properties of iron by the controlled use of additives to form steel alloys.</p>	<p>Powerpoint presentation Workbook/worksheet Videos Chapter test/quizzes Homework</p>
15	16 – 20 December	<p>Chapter test Feedback on the chapter test</p>	