

SUBJECT

Chemistry

KEY STAGE 4 – Year 10/11

SUMMARY CURRICULUM PLAN

Subject content (What will be covered)	As a result, what students should know /understood	What students should be able to do (application/skills developed)	By when (Half term 1 > 6)
Topic 1 – Atomic structure	The arrangement of subatomic particles and how the structure of the atom has evolved	Draw and label diagrams of atoms Describe the evidence that has led to this picture of the atom Balance equations	This is covered in the year 9 foundation year
Topic 3 – Structure and bonding	How atoms bond to form compounds, the properties associated with different types of bonding and the use and application of nanoparticles <i>SMSC – as long term consequences of nanoparticle are unknown should we be developing them?</i> <i>CIAG – new and developing area of research that any students who take chemistry further are likely to work with</i>	Draw diagrams to show ionic and covalent bonds Recall the properties of different types of structures Describe the uses of nanoparticles	Year 10 HT 1 / 2
Topic 2 – The periodic table	How the periodic table developed and how elements are arranged in the periodic table <i>SMSC – use of standardised symbols across all cultures</i>	Describe the arrangement of elements in the periodic table and make links between the position of elements and their properties	Year 10 HT 2
Topic 4 – Chemical calculations	What a mole is in chemistry and how to use them in calculations	Calculate; relative formula mass, no of moles of a substance, % yield, atom economy, concentration of solutions and volumes of gases	Year 10 HT 2 / 3
Topic 5 – Chemical changes	What the reactivity series is and what happens during neutralisation reactions	Write balanced equations for the formation of salts in neutralisation reactions Use the reactivity series to predict the products of reactions and describe how metals are extracted from their ores	Year 10 HT 3
Topic 6 – Electrolysis	What happens to ions during electrolysis and how this can be used to extract elements	Write half equations for the reactions taking place at the anode and cathode Describe the extraction and of aluminium Explain the products produced in the electrolysis of brine and give uses for these products	Year 10 HT 4

Topic 7 – Energy changes	What is meant by exothermic and endothermic reaction and how to calculate the enthalpy change in a reaction from bond enthalpies. How fuel cells are used to provide energy <i>SMSC – understanding of moral responsibility to explore alternative forms of energy</i>	Draw enthalpy profiles for reactions Use bond energy data to calculate enthalpy changes Describe the use of fuels cells and batteries	This is covered in the year 9 foundation year
Topic 8 – Rates and equilibrium	How reaction rates can be changed and how to alter the amount of products formed in equilibrium <i>CIAG – when developing industrial processes chemical engineers have to look at the best conditions for an experiment to be profitable</i>	Describe and explain how different conditions can alter reaction rates Describe how different conditions alter the position of an equilibrium	Year 10 HT 5
Topic 9 – Crude oil and fuels	What crude oil is and how it is refined to be used for fuel	Write balanced combustion equations Explain fractional distillation and cracking	Year 10 HT 6
Topic 10 – Organic reactions	The reactions of alkenes and other organic compounds	Describe some of the reactions of alkenes, alcohols and carboxylic acids and their uses	Year 11 HT 1
Topic 11 – Polymers	How polymers are formed by addition and condensation	Draw diagrams to show the formation of polymers from monomers and vice versa Identify natural and synthetic polymers	Year 11 HT 1
Topic 12 – Chemical analysis	How to test for ions present in compounds using chemical and spectroscopic techniques <i>CIAG – link between the techniques used in lessons and those used in industry</i>	Recall the tests for specific positive and negative ions and use this to identify compounds Describe the advantages of instrumental analysis over chemical analysis	Year 11 HT 2
Topic 13 – The Earth's atmosphere	How our atmosphere evolved into the composition it is today and how it is likely to change in the future <i>SMSC – An appreciation of how carbon dioxide and acid rain production in one country adversely affects another</i>	Describe the early composition of our atmosphere and the processes that caused it to change Recall the current percentages of gases in our atmosphere Describe how greenhouse gasses cause climate change and the likely effects of this	Year 11 HT 2
Topic 14 – The Earth's resources	The difference between finite and renewable resources, how this impacts on life cycle assessments and how water is made safe to drink <i>SMSC – the moral responsibility to preserve water</i>	Describe the processes used to treat drinking and waste water Complete and interpret life cycle assessments	Year 11 HT 3
Topic 15 – Using our resources (chemistry GCSE only)	Develop knowledge from throughout the course and apply it to specific situations eg rusting and the Haber process	Explain how rusting can be prevented Explain how the properties of materials can be changed for specific uses Explain the ideal conditions for the Haber process	Year 11 HT 4

Each half term students will sit a test to cover the content studied in that term which students will be expected to revise for thoroughly and, if appropriate, make revision notes. Other homework will also be set to enhance or develop student's learning.