

EASTBURY SUBJECT CURRICULUM

Subject	AS Chemistry
Overview	<p>Year 12 students are beginning their A Level Chemistry career. The AS course will build on GCSE concepts however it will be a big jump to AS standard with pupils expected to build on prior learning by exploring new subject material and applying knowledge to unfamiliar situations.</p> <p>In year 12 students will focus on moles, atomic structure, bonding and structure, energetics and environmental chemistry. This knowledge is the basic foundation of the Chemistry course and will be tested in the A2 course in the following year.</p> <p>The AS Chemistry course is structured according to Units with new modules in each unit introduced termly. The two units which form the focus of AS Chemistry are F321 (Atoms, bonds and groups) and F322 (Hydrocarbons, energetics and environmental Chemistry). Practical tasks which comprise 25% of the A Level are completed each term.</p> <p>Schemes of work are set and underpinned by a strong appreciation of A Level Chemistry, evaluative and analytical skills, the ability to link with Maths, specialist subject vocabulary and literacy, home learning and discussion.</p>
Term by term	
Autumn	<p>F321 Module 1 Atoms and reactions.</p> <p>Students will explore the history of the atom and learn about advances in scientific knowledge which were responsible for the modern theory of atomic structure. This module has a strong focus on calculations. Students will use data from practical experiments and theoretical sources to calculate; moles, gas volumes and moles in solution. Students will apply this knowledge to calculate amounts of substance using stoichiometry as well as the water of crystallisation of salts. The module will also introduce new concepts on acids, bases and salts. Students will have the opportunity to carry out titration experiments and apply their learning to real life situations.</p> <p>F231 Module 2 – Electrons, bonding and structure</p> <p>Students will study evidence for electron shells and atomic orbitals. They will be introduced to the s,p,d,f notation of orbitals and VSEPR theory. Students will use this learning to explain trends in the periodic table. Students will also review prior learning on bonding and apply this to new situations which require them to deduce the shapes of molecules taking into account the type of bonding and number of bonds present in a molecule.</p> <p>F231 Module 3 – The periodic table</p> <p>Prior learning on the periodic table will be extended to explanation of trends such as ionisation energy, reactivity and boiling points. Students will apply learning on electronic configuration to explain these trends. Students will also study in depth the chemistry of group 2 and group 7 elements.</p>
Spring	<p>F322 Module 1 Basic concepts and hydrocarbons</p> <p>In this term students will learn the language of the organic chemist – how compounds are named and how reactions are carried out. Students will learn naming of organic compounds, formulae of organic compounds (skeletal,</p>

	<p>structural and displayed) and reactions of organic compounds. The reactions students will focus on are; free radical substitution reaction of alkanes, electrophilic addition reactions of alkenes and polymerisation.</p> <p>F322 Module 2 Alcohols, halogenoalkanes and analysis</p> <p>In this module, students will study the physical and chemical properties of two functional groups: alcohols and halogenoalkanes. Students will study the following; naming of alcohols, preparation and uses of alcohols, combustion and oxidation reactions of alcohols, esterification and dehydration of alcohols. Following this, students will study the reactions of halogenoalkanes, their uses and effect on the environment. An introduction to analytical techniques will be done at this point. Students will focus on Infra-red spectroscopy and mass spectrometry and use these to determine structure of unknown compounds.</p>
Summer	<p>F322 Module 3 Energy</p> <p>In this module students will learn about energy, equilibrium and rates. Students will study exothermic and endothermic reactions. Students will also discover how to calculate energy changes from both their own experiments and from theoretical data. In this module students will explore the conditions required to increase the rate of a chemical reaction and the effect of these conditions on a chemical equilibrium.</p> <p>F3252 Module 4 Resources</p> <p>Students will examine the causes of the greenhouse effect as well as the reasons for ozone depletion. They will also investigate the roles of the chemist in minimising further damage. The study of “green chemistry” will help students understand how the chemical industry is having a positive effect on our environment.</p>
Homework	<p>Homework is given twice a week and students are expected to spend at least 1 hour on each piece.</p> <p>Homework’s will vary in task incorporating research, pre-reading, practice question on Doodle (https://www.doddlelearn.co.uk/) and exam questions. Please check planners, www.showmyhomework.com and the student’s Assessment booklets to check progress and effort.</p> <p>Although the Chemistry department will set regular homework it must be emphasised strongly that at this stage in their learning students should be engaged in extra independent learning activities which they structure and manage on their own. It is important for students to design and stick to a regular study timetable, making sure that they are putting in at least 5 hours extra study time per week to focus on Chemistry. This time should ideally be spent reviewing learning, attempting past exam questions, mind-mapping, making revision cards and doing further reading around the Chemistry topics they have studied as well as future topics.</p>
Additional information	<p>Essential equipment:</p> <ul style="list-style-type: none"> • Basic equipment for learning – blue/black pen, green pen, pencil, eraser, ruler. • The Chemistry department conducts practical experiments on a regular basis and students are expected to purchase a Lab coat which is to be used when doing practical experiments.

	<ul style="list-style-type: none"> • Chemistry involves a lot of calculations and students are expected to bring a calculator with them to all lessons. <p>At least three Chemistry practical tasks which form 25% of the Chemistry A-Level grade will be completed by students at various times during the year. The timing of the practical tasks will be determined by publication of practical tasks by OCR and availability of resources.</p> <p>The Chemistry department will from time to time run intervention sessions for students depending on their need. It is expected that students attend and engage with whatever intervention will be put in place for them.</p>
Useful resources	<p>Here are some excellent websites for research and information. You can use these to structure independent learning activities.</p> <p>http://ocr.org.uk/qualifications/as-a-level-gce-chemistry-a-h034-h434/ OCR Chemistry A information webpage (including specification)</p> <p>https://www.doddlelearn.co.uk/ Doodlelearn – revision app</p> <p>http://chemnotes.org.uk/ocr.html Chemnotes - revision notes for OCR Chemistry A</p> <p>http://www.chemguide.co.uk/ Chemguide</p> <p>http://www.knockhardy.org.uk/ppoints.htm Knockhardy - chemistry revision powerpoints</p>