Curriculum Summary Document

Year 10 - Science

Module/Unit of Learning	Taught During	What will students learn?	How are students challenged to become experts?	Links to other Subjects
Ecology	**Autumn 1**	Students finish the year by studying food webs and chains and how factors can affect the distribution of organisms. Students will then use different sampling methods to estimate the abundance of organisms in an area and also look at their distribution. This module also allows students to look at different adaptations organisms have for certain habitats.	Porthpean beach trip to apply sampling techniques learnt in the classroom to a different habitat	**Geography**
Chemical Bonding	**Autumn 1**	Students will learn all about ionic, covalent and metallic bonding linking the type of bond into the structure and the properties that the compounds, molecules and metals have. This builds on work that students did in Y8 when they compared the properties of metals and non-metals.	Students are challenged to use the structure and type of bond to explain the properties. Students are also asked to compare different types of bond. Triple students also study the fast-moving science that is nanotechnology.	**Maths**
Organic Chemistry	**Autumn 2**	In this unit, students cover the formation and use of crude oil and the hydrocarbons found in crude oil. We also look at the processes of fractional distillation and cracking and why they are important to meet the demand worldwide.	Students apply their knowledge of fractional distillation and cracking to be able to compare them. Students are also taught how to write and balance symbol equations showing cracking. Knowledge of covalent molecules from the previous module is used to deepen students understanding.	**Geography**
Chemical changes & Energy changes	**Autumn 2**	In these two chemistry modules, students cover the process of electrolysis as a way of separating metals and non-metals. Students also learn about endothermic and exothermic reactions and build on the knowledge they gained in Y8.	Students are required to link their knowledge of ionic compounds and metal reactivity into how electrolysis works. Students will construct energy level diagrams and calculate bond energies to show endo and exo reactions.	

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Waves (Combined) Electricity (Triple and Combined)	**Autumn 2**	Combined students cover waves (triple students cover this later in the year due to the extra content). In waves, students learn all about the difference between longitudinal and transverse waves as well as the EM spectrum and the uses of each member of the EM spectrum. In electricity students learn all about current, potential difference, resistance and how they behave in series and parallel circuits. Students will also learn about domestic appliances and mains electricity.	Application of EM waves to wider uses requires a higher level of understanding. Electricity is a difficult concept to grasp for many students so visual models are used to help students have a good understanding of electricity.	**Maths**
Homeostasis and Response	**Spring 1**	Students will learn all about how we respond to changes in our environment to maintain optimal internal conditions. Students will study the nervous system and endocrine system to understand how they allow us to respond to different stimuli. Later in the module students will build on work they did in Y7 and study reproductive hormones.	Students have covered the basics of nerve cell adaptations, menstrual cycle and hormones throughout Y7, 8 and 9. Students knowledge is stretched and deepened by building on these fundamentals. Students also cover the mechanics of how we learn which is beyond the specification.	
Quantitative Chemistry	**Spring 1**	Quantitative chemistry is all about calculating how much reactant or product is used or made during chemical reactions. Students will learn the skills and techniques used to tackle mathematical problems.	Students use the required practical of making a salt to apply their knowledge and skills of calculating the mass of reactants used and products formed	**Maths**
Rate and extent of Chemical reactions	**Spring 2**	In this unit, students learn all about how to increase the speed of chemical reactions to maximise the products formed. This is particularly useful in industries where they rely on their products to make profit. There are lots of opportunities for students to apply their knowledge to practical situations to observe factors that affect the rate of reaction.	Using practical tasks and observations develops students scientific skills and provides opportunities for them to think more like a scientist.	
Forces	**Spring 2**	Students will learn all about forces and how they interact with objects and the effect on the objects motion. Students will also apply Newton's laws of motion to different scenarios such as skydivers. Triple students study waves (please see above for more information).	Application of knowledge to real world examples such as a skydiver or Usain Bolt's 100m world record requires a higher level of understanding.	**Maths**

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Magnetism (Combined)	**Spring 2**	In the final unit of Y10, students learn all about permanent and induced magnets. Students also cover electromagnets and the motor effect – applying these to everyday use.	Applying knowledge to everyday uses requires a high level of understanding. Some students will also use and manipulate the F=BIL equation.	**Maths**
PPE revision and preparation	**Summer 1**	Students will revise the biology, chemistry and physics content studied in Y10 in preparation for the PPE exams	Students look at the content and skills holistically linking together knowledge from both Y10 and Y9.	
PPE follow up	**Summer 2**	Following the completion of PPE exams, students will go through their papers with their teachers guiding them.	Students develop their exam technique and metacognition skills.	