Triple science

With the triple science course, which is taught in the option block as additional three lessons on top of the compulsory Combined Science, nearly all of the extra content that converts the Double qualification into three separate GCSEs is linked to units that students will cover in their core science lessons.

Year 10 Curriculum

Term	Topic	Why Now?
7 & 8	**CB8 - Exchange** - Efficient transport and exchange - Circulatory system - The Heart – Dissection - Respiration rates – Core practical.	This is a highly accessible unit links the unit on cells and adaptations with diffusion and gas exchange and looks at how substances are transported around the body and acts as a nice precursor to the unit on disease which includes lifestyle diseases related to the circulatory system.
	CB5 - Health and Disease - Cardiovascular disease - Pathogens - Immune system - Antibiotics	Strengthening the interdependence theme, students have done the cell structures and specialisation topic, and this unit now extends these themes whilst taking on a specifically human context. Students are approaching the age where they will make behavioural choices which could impact their physical/mental wellbeing (and that of others) – educating them now about big issues such lifestyle diseases, immunisation and the effects of poor hygiene and sanitation could have a major positive impact in helping them understand the implications of the decisions they make. The study of how bacteria become antibiotic resistant also acts as a pertinent precursor to genetic inheritance.
	CP1 - Motion - Vectors and scalars - Acceleration - Distance time graph - Velocity time graph	This unit links very strongly to the 'Forces' unit covered in year 9 but has been left until year 10 because, although conceptually easy, the combination of graphical

		and equation work to solve problems can be quite demanding earlier on in the course. By this stage, through the work that they do in maths and the 'interpretation' work done in science, students are more confident in extracting information from graphs to use in equations.
	CC8 – Acids and Alkali - Bases and salts - Preparing copper sulphate – Core practical - Balancing equations - Investigation Neutralisation – Core practical - Reactions of acids with metals and carbonates - Solubility	Once students understand what an acid and a base are, along with how to identify them, the process of neutralisation becomes a relatively accessible routeway into carrying out and understanding chemical reactions. Which then leads on to predicting and balancing chemical reactions, which lays the foundations for the quantitative chemistry units in year 10 and 11. There is also the opportunity here to reinforce students' measurement practical skills and introduce students slowly to 'precision' practical skills like titration.
	CB2 – Cells and Control (to return to in y10) **-** Mitosis - Growth in Plants - Growth in Animals)	The Growth and Repair part of this unit provides a pertinent link from health and disease in terms of needing to produce new replacement cells and affords the opportunity to introduce students to tissues not yet encountered but that they will need to know (Xylem nerve cells etc). It also provides the opportunity to explain the role of DNA in the cell reproduction process and need to have a copy in each 'self-repairing' cell as this will feed directly into the 'Inheritance' and 'Selection' units.
9 & 10	**CC13 - Groups in the Periodic Table** **CC14 - Rates of Reaction** **CC15 - Heat Energy Changes in reactions**	

	- Groups I, VII and 0 - Rates of reaction - Endo and Exo thermic reactions	The reactions of group I and VII further prepare the ground for the calculation-based chemistry. With the energy and forces unit complete, rates of reaction should be easily conceptually accessible, and will feed into the photosynthesis unit when it arises. Endo and exothermic reactions will help bring together the forces, energy and bonding units, and again will feed into photosynthesis.
	CB3 - Genetics **CB4 - Natural Selection and genetic modification** - Meiosis - DNA extraction - Core practical - Mutation and Variation - Evolution - Breeding and variety - Genes in agriculture and medicine	The groundwork has been laid with mitotic cell division and with the development of antibiotic resistant bacteria; students are now ready to access this unit. This ensures that all the **paper 1 Biology** content is delivered, ready for a full mock exam at the end of the year – thus allowing whole papers to be used to gauge attainment and progress using the published grade boundaries.
	CP9 - Electricity and circuits - *(Electrostatics)* - Current, Charge and Potential Difference - Resistance - Investigating Resistance – Core practical - Power - Electrical safety	Another topic that students will be familiar with from KS3, but quite often without having the foundation knowledge to understand what is happening in terms of electrons. This brings an opportunity for students to experience how their learning so far helps to explain something they have been familiar with since the start of secondary. It also affords the opportunity for a large chunk or practical work in what are otherwise two quite 'theory driven units'. There is also a real opportunity for mathematical work involving selection of equations, selection of relevant values and consolidating the use of prefixes for large and small

		numbers. This unit needs to be done before CP10 and CP11 (Magnetism, Motor Effect and Induction).
11 & 12	**CC - 10, 11, 12 Electrolysis and Metals** - Electrolysis - Copper sulphate – Core practical - Reactivity - Ores, Oxidation and Reduction - Dynamic Equilibrium - Life cycle Assessment and Recycling	The groundwork has been laid with electricity, atomic structure and bonding; students are now ready to access this unit. This ensures that all the **paper 1 Chemistry** content is delivered, ready for a full mock exam at the end of the year – thus allowing whole papers to be used to gauge attainment and progress using the published grade boundaries.
	CP6 - Radioactivity - Atomic models - Radiation - Radioactive decay - Half life - Dangers of Radiation	The groundwork has been laid with the work on atomic structure, waves, energy and DNA and Genetics along with the mathematical skills developed throughout the (nearly) 2 years up to this point; students are now ready to access this unit. This ensures that after the 'Motion' topic is delivered at the beginning of term 6, all the **paper 1 Physics** content is delivered, ready for a full mock exam at the end of the year – thus allowing whole papers to be used to gauge attainment and progress using the published grade boundaries.
	CB8 - Ecosystems and Material Cycles - Abiotic and Biotic factors - Quadrats and Transects - Core practical - Biodiversity - Parasitism and Mutualism - Carbon, Water and Nitrogen cycle	Conceptually quite accessible at any level to students, this can be taught around the activities, exams and trips that can often go on at the end of summer term - students can quite easily find an access point into the lessons if they have missed a previous one. Also, if circumstances allow, this is the best time to do trips into fields and wildlife areas to monitor etc.

	Review and consolidation of the content covered in the year accompanied by an end of year Exam. This will consist of three full GCSE paper 1s (Paper 1 in biology, Paper 1 in chemistry and paper 1 in Physics).	Now that the content is covered to sit these papers completely, students will gain the first experience of sitting full GCSE papers.

With extra triple science lessons starting at the beginning of year 10, the first port of call is to cover extra content from the year 9 units of waves and forces.

Year 11 Curriculum

Term	Topic	Why Now?
13	**Revision activities** - The mock exams will have highlighted areas where further work needs to be done, the areas for development from these exams will determine the focus of these revision activities.	This is an opportunity to remind, reinforce and develop students' understanding and knowledge in these areas of weakness, thus preparing them for the topics to come. It also provides the opportunity to kick start revision for the final exams and model methods of revision to give students an opportunity to find what works best for them.
	CB7 - Animal Control - Hormones - Menstrual cycle - Diabetes and blood sugar	Packed full of information that doesn't come arise in any of the other units, this unit could easily get 'forgotten' if done earlier in the course, but with the links to fertility and contraception is relevant to be done as early as possible – hence placed at the start of the year.
	CB6 - Plants - Photosynthesis - Light intensity and Photosynthesis- Core practical - Transpiration and Translocation	Students have thought about transport in animas, and also studied the unit on ecosystems – this unit ties in the ideas in those units.
14	**CC9 - Molar Calculations** - Mass and empirical formulae - Conservation of mass - Moles	The most mathematically challenging of all the units – this consolidates all the work on quantitative chemistry so far, ready for the November mocks.
	CP7/P8 - Energy and Forces - Vector diagrams	

	- Work and Power **Revision activities** - The Nov. mock exams will have highlighted areas where further work needs to be done, the areas for development from these exams will determine the focus of these revision activities.	Provides an opportunity for revision of forces and motion as well as covering the new content.
15	**CP10/11 - Magnetism** - Magnets - Electromagnets - Transformers **CC16/17 - Fuels and Earth** - Hydrocarbons - Combustion - The atmosphere - Climate Change	Provides an opportunity to review and revise the concepts from the energy and electricity topics as well as cover the new unit content. Again, an opportunity to review topics such as energy, acids and alkalis, and waves as well as get them thinking about the bigger issues. Though the 'science' of the unit is not too tricky, the themes of sustainability, responsibility and lifestyle choices require maturity if students re going to engage properly and think about the impact of their lifestyle choices, so this unit is best done as late on as possible.
16	**CP12/13 – Particle Model, Forces and Matter** - Density - Investigating Densities – Core practical - Energy calculation - Investigating water – Core practical - Pressure - Bending and stretching (Hooke's law) - Investigating Springs – Core practical	This unit allows the opportunity to strengthen and extend students' mathematical work in science and acts as a good springboard into revision with the themes of energy, forces, particles and investigative science.
17	**Revision and Examinations**	

From then on, students study the extra content related to the units they have studied in core science in the following term in triple science.