Key Stage 4

Students in Key Stage 4 follow the Edexcel GCSE course of study. This will either be Combined Science or Triple Science. Students are invited to apply for Triple Science at the end of Year 9. Due to the increased academic demand of the triple science course, applications are reviewed carefully, taking into account a range of factors, including academic performance, behaviour, attitude to learning and homework completion.

As a faculty, we have fully reviewed this syllabus and planned bespoke schemes of work that allow students to achieve all the prescribed learning objectives of their course. There is a clear rationale for the teaching sequence of the various topics and a clear programme of practical work that supports the core practical element of the GCSE.

Summary of Content

Biology	
Year 9	Students begin with Topic 9 (Ecosystems and Material Cycles) in the final term of Year 9. This will enable us to complete material promptly in Year 11, and also links to previous KS3 work on feeding relationships. Key core practical and theoretical work is based around field work and sampling and this is much easier to complete in the summer term. Along with a slightly less cognitive demand this topic is ideal as a review of previous KS3 work and an introduction to some of the ideas concerning interconnectedness within Biology.
Year 10	Students begin Year 10 with Key Concepts in Biology which allows us to review and develop key ideas from KS3. It also introduces mathematical skills early on that will be essential for the course. The remaining content follows logically. We review control of cells and communication (Topic 2); then support a developing understanding of Genetics (Topic 3); before we move on to Selective Breeding/GM (Topic 4). Year 10 work is completed by applying these key ideas to understand issues concerning the cellular basis for health and disease (Topic 5).
Year 11	We begin Year 11 study with a focus on plant structures and how they support photosynthesis (Topic 6). This again builds on prior learning concerning cell structure and adaptation and interactions of cells, tissues and organs. The final weeks of warm weather support important core practical work. We then review the core principles of respiration again with students and similarly to Topic 7, how this is facilitated by specially adapted cells, tissues and organs in animals (Topic 8). The course is completed with a recap of communication within and between cells (as a review of key ideas in Topic 1) with a particular focus on hormones (Topic 7). Students are expected to look at particular case studies such as control of metabolism, menstruation and Diabetes. This again allows application of ideas and understanding gained from previous topics.

Chemistry	
Year 9	In the summer term of Year 9, students cover the basics of the particle model (Topics 1 & 3) – building on content covered in Year 7. They will also cover separating techniques (Topic 2) as this will enable students to begin to apply what they have previously learned about the chemical and physical properties of particles. Coupled with the relative academic accessibility of this material, this should provide a firm basis for an introduction to GCSE Chemistry.
Year 10	At the beginning of Year 10 students will learn the basics of atomic structure, learning what atoms are made up of and how they are arranged (Topic 3). They revisit the idea of patterns and periodicity and look at the periodic table in more detail (Topics 4 & 13). Learning how to interpret this information will provide a good foundation for understanding future topics such as acids and alkalis (Topic 8) and they will then apply this knowledge to provide explanations for different types of bonding and chemical reactions (Topics 5, 6 & 7). These topics are essential for comprehension of electrolytic processes (Topic 10) which are covered in the second half of the year. Topics towards the end of Year 10 are more maths based with mole calculations (Topic 9) and a discussion surrounding the extraction of metals (Topic 11) finishing the year.
Year 11	These last topics follow on really logically from those in Year 10 as they start to secure pupil's understanding and allows them to apply their prior learning to new and relevant situations. Prior knowledge of the particle model and application of the reactions studied in year 10 is essential in covering rates of reaction (Topic 14 & 15) followed by dynamic equilibrium (Topic 12). Students finish the course with topical issues that link to prior topics covered in Biology including using fuels and climate change (Topic 16 & 17).

Physics	
Year 9	Students begin the course in the summer term learning about different forms of waves and how these are a medium for energy transfer (Topic 4). They will develop ideas about sound and light that they have covered previously. This provides enough of a link with prior KS3 learning to reassure less confident students while facilitating development of key concepts and mathematical skills.
Year 10	Students continue into Year 10 with work on the electromagnetic spectrum (Topic 5) which relies heavily on knowledge covered in year 9. Radioactivity (Topic 6) follows on nicely from this as there is significant overlap between the two topics in regards energy transfer. This order also provides many opportunities for useful cross-curricular links with some of the more physical content from GCSE Chemistry. Students then explore more advanced ideas surrounding Motion and Forces (Topics 1 and 2) which build on ideas from Key Stage 3 whilst developing a more mathematical approach. Students finish the year with a discussion about conservation of energy (Topic 3) and Forces doing work (Topic 7/8). These topics require deeper level thinking to combine the mathematical and qualitative descriptions we use to describe our world and therefore come at the end of the year.
Year 11	Year 11 begins with a focus on electricity and electromagnetism (Topics 10-13). This immediately provides students with the opportunity to bring together a body of collected knowledge on the nature of forces and fundamental particles and apply it in various contexts. This is further reinforced for the remainder of the first two terms of Year 11 with extended and applied work on the particle model (Topic 14) and how forces affect matter (Topic 15).

Assessment Overview

Students complete a 20 mark short answer test at the end of each topic or group of topics, which uses exam questions to assess the key knowledge students need to progress. This is completed, marked and students are given feedback in one lesson. These results are recorded by students in a tracker in their books, allowing them to visualise topics they need more support in for homework and revision. Students also complete long answer questions in each topic, which they are given feedback on to help support them in the correct use of key language.

Homework is set on a weekly basis. Classroom teachers set regular, lesson appropriate tasks for the work completed that week which can either build on, or consolidate concepts covered in lessons depending on the need of the class.

In year 10 students sit end of term tests which cover a range of content taught during that term. Year 11 sit more extensive mock exams for Biology, Physics and Chemistry in November, January and Easter to assess their ability to achieve marks in an exam setting and habituate students to the experience of sitting an exam. In Year 11 students are supported by a comprehensive revision program facilitated by targeted completion of primary syllabus content by half term in February. Revision priorities are personalised for each student following comprehensive feedback given after each mock exam. In cases where students are felt to not be making the appropriate progress, booster sessions are made available as are a wide range of revision sessions throughout the faculty, including further mock exam practice during the Easter break.