

## Long Term Plan: Combined Physics Year 11

## "Science is simply the word we use to describe a method of organising our curiosity."

The programme for Y10 and 11 differs in comparison to KS3. There are 5 sets in each population. X/Y 2, 3, 4 and 5 classes will be taught combined science content and will either see a subject specialist teacher three times a fortnight, or have a solo teacher 9 times a fortnight.

There are 2 data collection points for Y11

Staff use the **Curriculum Road Map** to ensure they teach the correct topic with enough time to cover the depth and breadth of our curriculum

Topic	Unit title	Key knowledge/ Content to learn and retain	Essential skills to acquire (subject & generic)	Anticipated misconceptions	Links to previous KS	Links to future KS	Opportunity for stretch for high prior attainers		
One	Waves	Wave characteristics The wave equation Reflection and Refraction Electromagnetic waves (HT only) Use of waves in communication	Record accurate experimental data  Present and interpret data in tabular and graphical form.  Extended writing  Drawing scientific diagrams to the correct scale	That waves move matter - rather than just energy.	This unit builds directly from the waves topic at key stage three, taking a more quantitative approach, and introducing the idea of electromagnetic waves	At A-Level students will study all kinds of waves in more depth, taking a deeper mathematical approach.	Multi Step calculations drawing on equations from multiple units.		
SMSC & British Values	British values in science  Waves for communication  Dangers of using EM waves  Historic discovery of EM waves								

Cultural Capital	Use of waves for global and intergalactic communication The ubiquity of waves means that problems can be framed in a variety of familiar and unfamiliar contexts  https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1, https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf, https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html  More information here. This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences									
Career Link										
Two	Magnetism and Electromagnetism	Bar magnets and the magnetic field around them.  Magnetic attraction and repulsion  The Earth's magnetic field  Electromagnets  (HT Only) Electric Motors	Record accurate experimental data  Present and interpret data in tabular and graphical form.  Extended writing  Change the subject of, and evaluate equations with four terms.	That all metals are magnetic, rather than just iron, nickel and cobalt.	This unit follows on from the magnetism unit studied in KS3. Students will study the same concepts but in much greater depth.	In the second year of A-Level students will study these concepts in even greater depth, taking a mathematical approach.	Multi Step calculations drawing on equations from multiple units.			
SMSC & British Values	British values in science  Developments in technologies using magnetism and electromagnetism  How the Earth's magnetic field "flips" periodically and the vulnerability the Earth experiences during this short period of time when the switch happens									
Cultural Capital	Use of waves for global and intergalactic communication The ubiquity of magnetism means that problems can be framed in a variety of familiar and unfamiliar contexts									
Career Link	https://www.bbc.co.uk/bitesize/tags/zjb8f4j/jobs-that-use-science/1, https://www.bradfordacademy.co.uk/wp-content/uploads/2019/10/CEIAG-in-the-Curriculum-Science.pdf, https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/your-future-in-stem-a-z.html  More information here.  This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences									

## Three

Revision and preparation for GCSE exams (& Consolidation of this part of the KS4 programme of study)

Revisit to subject knowledge from across the course & use of PLC to ensure that students have a good grasp of all aspects of the specification

Use of retrieval quizzes and activities to identify gaps in SK and misconceptions

Support students in developing summary notes, flash cards etc to aid retrieval of key facts

Ensure that students have the necessary skills for effective revision

Focus on past exam questions and papers - command words and application of knowledge

Practice the application of knowledge that draws upon the practical aspects of the course

Timed completion of questions to support with pace through the exam paper

Extensive SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers