

Long Term Plan: Physics Year 10

“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 4 sets in each population. X/Y 2, 3 and 4 classes will be taught combined science content, set 5 will be taught triple content. Students will see a subject specialist teacher three times a fortnight (triple will be taught in a 5,5,4 split.

There are 2 data collection points for Y10

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	Particle Model and Matter	<p>Explain the term density in relation to particles,</p> <p>Describe the factors that affect density,</p> <p>Recall and use the density equation</p> <p>Describe a method to determine the density of a regular shaped object,</p> <p>Describe a method to determine the density of an irregular shaped object,</p>	<p>Practical Skills:</p> <ul style="list-style-type: none"> plan experiments or devise procedures test hypotheses, apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment. carry out experiments appropriately having due regard for the correct 	<p>Weight and density are the same thing.</p> <p>Density changes in proportion to the amount of a substance.</p>	<p>Year 7 Particles in states of matter, energy stores and transfers, changes of state</p> <p>Year 7 pressure in gases,</p>		

		<p>Suggest ways to improve the accuracy of the methods described</p> <p>Explain what is meant by internal energy,</p> <p>Explain how heating a system changes the energy stored in it.,</p> <p>Explain the difference between heat and temperature</p> <p>Describe the factors that affect the temperature increase of a system,</p> <p>Define specific heat capacity,</p> <p>Recall and use the equation for specific heat capacity</p> <p>Explain why a change of state is a physical change not a chemical change,</p> <p>Define latent heat,</p> <p>Investigate temperature changes during state changes in stearic acid.</p> <p>Explain how temperature changes the pressure exerted by a gas</p>	<p>manipulation of apparatus, the accuracy of measurements and health and safety considerations.</p> <ul style="list-style-type: none"> ● Focus on accuracy of using a measuring cylinder <p>Scientific Skills:</p> <ul style="list-style-type: none"> ● make and record observations and measurements using a range of apparatus and methods. ● evaluate methods and suggest possible improvements and further investigations. ● recognise/draw simple diagrams to model the difference between solids, liquids and gases. 		<p>Year 7 particle theory and energy stores and transfers</p>		
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SMSC & British Values	British values in science Working safely in a lab and respecting each other's workspace						
Cultural Capital	The ubiquity of forces 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						
Two	Mains electricity	Mains supply V battery supply of current Safety in the form of fuses, circuit breakers and safety plugs Electricity use in the home, and calculations of appliance power Supplying electricity through the national grid	Practice the wiring of plugs Extended writing Change the subject of an equation and evaluate an equation with three or four terms.	Transformers are robots in disguise and not devices for altering the potential difference within a circuit	In upper Key Stage two students will have studied simple circuits and how the number of cells affects the brightness of bulbs. They will also have studied simple component symbols	This unit builds directly onto the electricity unit at AS Level.	Multistep calculations, involving two or more electricity equations
SMSC & British Values	British values in science Working safely in a lab and respecting each other's workspace Economic and safety reasons for using the National Grid system						
Cultural Capital	The ubiquity of electricity means that problems can be framed in a variety of familiar and unfamiliar context The safety aspects of electricity use in the home In the current climate the production of sufficient electricity, across the globe, to meet customer demand						

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 . Studying electricity, and the use of electricity in the home, opens doors to a wide range of STEM field careers; particularly those in engineering, architecture, and mechanical sciences						
Three	Forces & Motion	Motion-Time graphs Newton's second law Acceleration Terminal velocity and stopping distance	Changing the subject of equations Record accurate results in an appropriate format Present and interpret data in tabular and graphical form. Calculate the gradient of a line Draw tangents to a line	Students often state that an object will be still if there is no force acting upon it, so it is important to stress that if it is moving it will remain moving.	This unit builds directly from the study of forces and motion at key stage three; extending students knowledge to look at more quantitative analysis and the affect of forces in more complex	Forces and mechanics forms a unit at A-Level, where the same concepts will be covered in more depth	Multi-Step momentum calculations
SMSC & British Values	British values in science Working safely in a lab and respecting each other's workspace						
Cultural Capital	The ubiquity of forces 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						

Four	<p>Students have end of year exams and 2 weeks of work experience in this final section of the academic year.</p> <p>Revision and preparation for PPE's</p> <p>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</p> <p>Use of retrieval quizzes and activities to identify gaps in SK and misconceptions</p> <p>Support students in developing summary notes, flash cards etc to aid retrieval of key facts</p> <p>Ensure that students have the necessary skills for effective revision</p> <p>Focus on past exam questions and papers – command words and application of knowledge</p> <p>Practice the application of knowledge that draws upon the practical aspects of the course</p> <p>Timed completion of questions to support with pace through the exam paper</p> <p>Extensive SLOP style activities to ensure that all are prepared for the aspects of maths that will be present on the exam papers</p>
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