

Content	As a result, what students should know /understand	What students should be able to do (application/skills developed)	By when
P1.1/P1.2 Heat, energy and efficiency	Students are introduced to the kinetic model as a way of understanding how heat transfers through conduction, convection and radiation. This is then developed to consider the nine forms of energy and how energy is transferred in different situations. This is then developed to include efficiency of energy transfers	Use the kinetic model to describe processes involving: conduction, convection and radiation. Use and be able to re-arrange appropriate Physics equations. Remember the nine forms of energy. Be able to describe and explain simple energy transfers. Correctly draw a Sankey diagram.	Year 10 HT1
P1.3/P1.4 Electrical devices and generating electricity	Students consider the power equation and how we buy electricity in units of Kilowatt-hours. The topic then develops to consider the way that electricity is generated from both renewable and non-renewable sources. Finally, the topic considers large scale power stations to discuss issues relating to meeting the demand for electricity on a national scale.	Use and be able to re-arrange appropriate Physics equations. Determine the cost of running appliances using ideas of Kilowatt-hours and the power equation. Know a variety of renewable and non-renewable energy resources. Describe the stages of energy generation in a power station. Know the role of the National Grid in helping to meet electricity demand.	Year 10 HT2
P1.5/P1.6 Waves and Red-shift	Students consider the basic properties of waves and three things that waves can do: reflect, refract and diffract. They apply understanding of frequency, wavelength and wave speed in the wave equation. The electromagnetic spectrum is considered. Students then go on to learn about the Doppler effect and how absorption lines in stars tell us how they move in the heavens. The topic finishes by considering Cosmic Microwave Background Radiation and Cosmological Red-shift as evidence for the Big Bang Theory.	Know basic properties of waves like: wavelength, frequency, amplitude and wave speed. Use and be able to re-arrange appropriate Physics equations. Describe situations involving: conduction, convection and radiation. Know the order of the waves in the electromagnetic spectrum and be able to apply the wave equation to waves within it. To be able to describe the Big Bang Theory and the evidence that there is to support this.	Year 10 HT3
P2.1 Forces and Motion	Students consider what forces do and how forces affect objects. Students then go on to consider speed and acceleration and how these are displayed in distance-time and speed-time graphs. Students consider how forces give rise to acceleration and finish by considering objects falling at their fastest speed, at terminal velocity.	Know how to determine the resultant force in a given situation Use and be able to re-arrange appropriate Physics equations. Analyse motion graphs to know what they can tell us. Know that unbalanced forces give rise to acceleration. Be able to describe how forces acting on an object change when it falls at its terminal velocity.	Year 10 HT4
P2.2 Forces and Kinetic Energy	Students begin by considering what is meant by the term 'work done' and how this can be applied in Physics. The topic then develops to consider Kinetic energy and Potential energy. The application of physics comes with a consideration of momentum and	Use and be able to re-arrange appropriate Physics equations. To confidently use the term 'work done'. To know the principle of conservation of momentum and apply it to car safety.	Year 10 HT5

	momentum changes, with car safety used as a focus for this.		
P2.3/ISA 1 Electrical circuits	The topic begins by reviewing the simple model of the atom and how this helps to explain static electricity. The topic then moves on to conventional electric circuits with students considering series and parallel circuits. Students also consider Ohmic and Non-Ohmic behaviour.	To be able to describe key electrical terms such as: Potential Difference, Current and Resistance. Use and be able to re-arrange appropriate Physics equations. To be able to draw and interpret circuit diagrams for series and parallel circuits. To understand the resistance behaviour for Ohmic and Non-Ohmic devices.	Year 10 HT6
P2.4/P2.5 Electrical safety, Atoms and radiation	Students consider how electricity is used at home. They learn how a domestic plug should be wired correctly as well as the role of the fuse and the Earth wire. The topic then moves on to revisit the atomic model, with a focus on the radiation that comes from the nucleus as alpha, beta or gamma. Half-life of radioactive samples is considered as well as how to determine this from a graph. Issues relating to nuclear radiation are also considered.	To understand how electricity is used within a domestic context. To know the difference between AC and DC. To know how to correctly wire a plug. To know some of the features of UK plug, such as the fuse and the Earth wire. To know the different types of nuclear radiation and their relevant properties. To understand half-life and know how to determine this from a graph of radioactive decay.	Year 11 HT1
P2.6/P3.1 Nuclear fission and fusion, Medical applications of Physics	The topic begins by considering the application of nuclear processes through a study of nuclear fission as used in power stations. Nuclear fusion in stars is considered as a lead in to explaining the life cycles of stars, from birth to their inevitable death. We also consider where the elements in the Universe came from and that we are all made from stardust. The topic moves on to consider medical diagnostic techniques such as X-ray, CT scanning and Ultrasound; examples of medical uses of waves.	To be able to describe the processes of nuclear fission and fusion. To know that nuclear fusion is the power source for a star. To know the main stages that a large star and a small star will move through as part of their life cycles. To be able to describe how waves are used in medical diagnostic imaging in: X-rays, CT scanning and Ultrasound. To compare and contrast these techniques based on their relative merits.	Year 11 HT2
P3.2/ISA 2 Lenses and light	Students consider how lenses work by refracting the light that goes through them. They consider how to draw ray diagrams for both converging and diverging lenses, for both real and virtual situations. Students finish the topic by studying how lenses are used in the eye and how faults in vision can be corrected.	To understand how the refraction of light alters the path of a ray of light through it. To confidently draw ray diagrams using either converging or diverging lenses, to produce either real or virtual images. To know the main structures in the eye. To know how lenses are used to correct long and short sight.	Year 11 HT3
P3.3/P3.4 Making things work, Keeping things	Students learn about a variety of situations involving movement and motion, such as: moments, levers, centre of mass, stability pendulums and circular motion. Students then move on to learn about magnetic fields, electric motors and transformers.	To use and be able to re-arrange appropriate Physics equations in the context of moments and levers. To be able to use ideas of centre of mass to analyse an object for stability. To know that a moving electric current creates a magnetic field. To consider how magnetism and moving charges can create movement in a simple	Year 11 HT4

moving		electric motor. To consider how transformers can be used to alter the potential difference based on the ratio of the number of coils on the primary and secondary windings.	
Revision of P1, P2 and P3	At this time, formal teaching is over and our attention moves towards revision and practise of content within the context of past exam questions.	Students should be showing good focus and attention to work by making use of relevant practise assessment materials.	Year 11 HT5