Long Term Plan Year 11 Physics

SCARBOROUGH UTC
Technical Excellence, Employable Graduates

Half Term	Unit Title	Key Knowledge/Content to learn and retain	Essential Skills to acquire (subject & generic)	Link to intent and ethos	Anticipated misconceptions	Links to previous KS	Link to future KS	Opportunity for stretch and high prior attainers	SMSC & British Values	Cultural Capital	Career Link
One	Forces and motion	Motion-Time graphs Newton's second law Acceleration Terminal velocity and stopping distance (HT Only) Momentum	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	Working safely in a lab and respecting each other's work space	The ubiquity of forces means that problems can be framed in a variety of familiar and unfamiliar contexts	This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Two	Waves	Wave characteristics The wave equation (Triple Only) Lenses Seismic Waves Reflection and Refraction Electromagnet ic 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	Multistep calculations drawing on equations from multiple units.	Working safely in a lab and respecting each other's work space	The ubiquity of waves means that problems can be framed in a variety of familiar and unfamiliar contexts	This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Three	Magnetism and Electromagnetis m	Bar magnets and the magnetic field around them. Magnetic attraction and repulsion The Earth's magnetic field Electromagnet s (HT Only) Electric Motors (Triple Only) Transformers	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.	Multistep calculations drawing on equations from multiple units.	Working safely in a lab and respecting each other's work space	The ubiquity of magnetism means that problems can be framed in a variety of familiar and unfamiliar contexts	This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Three Triple Only	Space Physics	The solar system The moon The life cycle of a star Red shit, and evidence for the big bang.	Present and interpret data in tabular and graphical form. Extended writing		Some students think the sun must be special in some way, when it is in reality, a very average star. The status of Pluto. That the "dark side" of the moon is in perpetual darkness.	This unit follows on from the Universe Topic studied in KS3, looking at concepts in greater depth and introducing the idea of red shit and satellites.	This builds into the Astrophysics unit at A-Level which forms the bulk of Paper Three	Multistep calculations drawing on equations from multiple units.	Working safely in a lab and respecting each other's work space	A greater appreciation for our place in the universe	This programme opens doors to a wide range of STEM field careers; particularly those in engineering, architecture and mechanical sciences
Four		PPE's in November and February may mean that Ecology can often be taught in the first few weeks of term 4. After this is completed students will be led in detailed and planned revision sessions by staff. These will focus on paper 1 topics for the end of term 4 and paper 2 topics at the beginning of term 5.									
Five											
Six											