Curriculum Map: Year 11 Physics			
	Half Term 3	Half term 4	Half Term 5 and 6
Topic	Waves	Electromagnetism	Revision and preparation for exams
Intent	Students will learn: The differences between transverse and longitudinal waves. How to calculate the frequency, wavelength, and velocity of waves. To compare and contrast the uses, properties, application and hazards of EM radiation.	A recap of basic magnetism and magnetic forces which leads on to learning about the function of the compass and how they demonstrate magnetic fields. Factors which affect EM fields. Applications of EM fields in motors. The generator effect and the link between electricity and magnetism gives rise to using the generator effect and ultimately learning about how the transformer operates, which links back to Unit 2 - Electricity.	Students will: Consolidate learning from year 9, 10 and 11 Prepare for paper 1 and 2
Key Knowledge	Waves are a transfer of energy without transfer of mass. Longitudinal waves show areas of compression and rarefaction. Sound waves travelling through air are longitudinal T. The amplitude of a wave is the maximum displacement of a point on a wave away from its undisturbed position. The wavelength of a wave is the distance from a point on one wave to the equivalent point on the adjacent wave. The frequency of a wave is the number of waves passing a point each second. period = 1 / frequency All waves obey the wave equation: MS 1c, 3b, c Students should be able to apply this equation which is given on the Physics equation sheet. wave speed = frequency × wavelength $v = f\lambda$ Changes in atoms and the nuclei of atoms can result in electromagnetic waves being generated or absorbed over a wide frequency range. Gamma rays originate from changes in the nucleus of an atom. Ultraviolet waves, X-rays and gamma rays can have hazardous effects on human body tissue.	Students will learn: The basic properties of magnets and electromagnets. Factors which effect EM fields. Applications of EM fields in motors. Effects of Earth's magnetic field. Calculate magnetic flux density. The poles of a magnet are the places where the magnetic forces are strongest. When two magnets are brought close together they exert a force on each other. A permanent magnet produces its own magnetic field. An induced magnet is a material that becomes a magnet when it is placed in a magnetic field. Induced magnetism always causes a force of attraction. The region around a magnet where a force acts on another magnet or on a magnetic material (iron, steel, cobalt and nickel) is called the magnetic field. The force between a magnet and a magnetic material is always one of attraction. The field is strongest at the poles of the magnet. The direction of the magnetic field at any point is given by the	GCSE Physics from year 9 - 11

	The effects depend on the type of radiation and the size of the dose. Radiation dose (in sieverts) is a measure of the risk of harm resulting from an exposure of the body to the radiation. EM waves have many practical uses from communication including mobile, Bluetooth, fibre optics as well as medical imaging and treatments.	direction of the force that would act on another north pole placed at that point. The direction of a magnetic field line is from the north (seeking) pole of a magnet to the south(seeking) pole of the magnet. A magnetic compass contains a small bar magnet. The Earth has a magnetic field. The compass needle points in the direction of the Earth's magnetic field. When a current flows through a conducting wire a magnetic field is produced around the wire. The strength of the magnetic field depends on the current through the wire and the distance from the wire. Shaping a wire to form a solenoid increases the strength of the magnetic field created by a current through the wire. The magnetic field inside a solenoid is strong and uniform. The magnetic field around a solenoid has a similar shape to that of a bar magnet. Adding an iron core increases the strength of the magnetic field of a solenoid. An electromagnet is a solenoid with an iron core.	
Key Skills	Analysis Evaluate evidence Comparative reasoning Recall Maths Interpreting data from tables and graphs Use of scientific vocabulary	Analysis Evaluate evidence Comparative reasoning Recall Maths Interpreting data from tables and graphs Use of scientific vocabulary Problem solving Use of scientific vocabulary Making accurate observations	Analysis Recall Interpreting data from tables and graphs Use of scientific vocabulary
Key Vocabulary	Transverse, longitudinal, oscillation, displacement, velocity, wavelength, frequency, energy perpendicular, parallel, time period, hertz, absorb, transmit, reflect, refract, millisieverts, radiation, medium, amplitude.	Finite, potable water, fresh water, salty water, sterilisation, chlorine, ozone, ultraviolet light, desalination, distillation, reverse osmosis, agricultural waste, organic matter, sedimentation, sewage, raw materials.	

Key Reading	BBC Bitesize CGP revision guide	BBC Bitesize CGP revision guide	BBC Bitesize CGP revision guide
End Point	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Students can plot and analyse line graphs. Can recall practical methods.	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Can recall practical methods. Evaluate scientific data.	Students are competent in answering structured and longer response exam style questions. Students are competent in answering maths, data and graph-based questions. Able to structure comparative sentences. Can recall practical methods. Students can plot and analyse line graphs.
Form of Assessment	Exam ready questions	Exam ready questions Paper 2 mock/DC3	Exam ready questions
Enrichment Opportunities	Use of outdoor classroom As universities start to offer science-based workshops again Y11 will be given the opportunity to take part in trips to local universities to gain insights into scientific courses and careers.		
Leadership Opportunities	Chances to formally present within lessons and take ownership of that process. Student examples to demonstrate good quality work. Group work.		