

**EMMANUEL COLLEGE**  
**THE SCIENCE DEPARTMENT**

Year 8



<b>Year 8</b>	<b>Autumn Term</b>	<b>Summer Term</b>
<b>Unit Title</b>	Waves	Space and Electromagnetism
<b>Key Question(s)?</b>	What are waves and how do we detect them?	How do the planets in the solar system interact?
<b>Threshold Concepts</b>	<p>The idea of waves is useful because it is the key to explaining how energy can be transferred from one object to another object by radiation, even when the objects are not touching.</p> <p>Waves carry information that can be detected by humans or manufactured detectors. Understanding waves helps us to communicate, explore the universe, and transfer energy to where we want it.</p>	<p>The solar system can be modelled as planets rotating on tilted axes while orbiting the sun, moons orbiting planets, and sunlight spreading out and being reflected.</p> <p>Magnetic materials, electromagnets and the earth create magnetic fields which can be described by drawing field lines to show the strength and direction</p>
<b>Link to Prior Learning</b>	Students will have looked at the basic properties of sound and light in primary school.	Students would have looked at the way the earth works in space as well as some properties of magnets in primary school.
<b>Knowledge and Sequencing Rationale</b>	<p>In Year 8 we build on the core concepts that were introduced in Year 7. In Chemistry, we build on the nature of matter by looking at the chemical changes that take place based on the rearrangement of atoms. In Biology, we look the variation of multicellular organisms, the causes of this variation and then focus two of the most important biological processes that are used by multicellular organisms to survive. In Physics, we build on energy transfers by looking at how the idea of waves. We build on electricity and forces by looking at the nature of electromagnetism and role of gravity in our solar system. In Year 8 we also introduce some more difficult ideas which help students make the transition to GCSE. This includes looking at genes in Biology, reaction properties in Chemistry and wave properties in Physics. In Year 8 we continue to alternate between the three subject areas of science every six weeks so as not to hit cognitive overload. At the end of each six-week topic, a week of study is dedicated to revision, recap and formative feedback.</p>	