Richmond School & Sixth Form College
Being the best we can be

Year 10 Physics

The GCSE Physics course continues to build on knowledge and understanding of science from Key Stage 3, as well as more complex ideas that have been developed in year 9. P4 continues to develop ideas about atoms that were initially taught in the Key Stage 3 topic 'Matter', and also introduces the idea of radioactivity. Some of this topic is common content with Chemistry so encourages and supports retrieval practice across the two subjects. P1 Energy gives students more depth to their understanding of energy from Key Stage 3 and is developed further by then teaching P3, as it links SHC to LH. It also deepens students' understanding of particle models covered in Key stage 3 'Matter'. We then move on to P2 which further develops the ideas of circuits (met in Key Stage 3 'electromagnets'), and links back to P1 and the circuit built for SHC. P6 finishes the year which looks at waves, developing ideas initially taught in the Key Stage 3 'Waves' topic, as well as linking back to P1 energy. There are a large number of equations in P1, P2, P3 and P6 so students are regularly checked for their mathematical ability and how to manipulate formulae, mainly through starter activities, as well as through exam question practice.
Investigative skills are developed by a number of required practical activities. There are also other practical activities that enrich learning, as well as practical demonstrations that do the same.

Methods of deepening and securing knowledge:	
Spaced practice	Nearly all topics are visited on multiple occasions throughout the two year GCSE Physics provision. This is sometimes to revisit topics in preparation for assessments. On other occasions it is to prepare for the learning of deeper and more challenging ideas within the same concept area.
Retrieval practice	All lessons have retrieval practice in them. This is usually as a starter activity, but is also found in the body of the lesson.
Elaboration	P2 elaborates on the SHC required practical from P1. P3 elaborates and extends on P1. P6 elaborates on P1.
Interleaving	Retrieval practice includes interleaved questions from previous topics, making connections between topics where possible. Many ideas from Key Stage 3 are revisited during Year 10 lessons.
Concrete examples	Every equation is taught with concrete examples to model for students how to approach calculations. Definitions are required of Tier 3 vocabulary e.g. students are given a concrete example of the definition of frequency, amplitude etc.
Dual coding	All required practicals have a dual coding instruction sheet. Duel coding is regularly used in physics to explain abstract ideas and for modelling.

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Topic(s)	**P4 Atomic Structure** - Atoms and isotopes	**P1 Energy (continued)** - Calculating energy	**P2 Electricity** - Domestic uses and safety, energy	**P3 Particle Model of Matter (continued)** -Pressure	**P5 Forces** - Forces and their interactions, work done and energy	**P5 Forces (continued)** - Pressure and pressure

	- Atoms and nuclear radiation - Hazards and uses of radioactive emissions - Blackbody radiation - Nuclear fission and fusion **P1 Energy** - Energy stores and pathways - Power - Calculating energy	- Specific heat capacity **P2 Electricity** - Current potential difference and resistance, series and parallel circuits.	transfers, static electricity **P3 Particle Model of Matter** - States of matter - Specific heat capacity and latent heat	**Preparation for PPEs**	transfer, forces and elasticity, moments, levers and gears.	differences in fluids. **P8 Space** -Solar system, life cycle of a star, redshift.
Assessment	- Aiming High 1 test – including topics studied up to this point in Year 10 and the Year 9 topics			- PPE – a whole exam paper covering P1-P4		- Aiming High 3 test – covering all Year 10 topics

Independent learning:
Independent learning is a core part of learning and serves to support learning in class, enrich the student experience and develop knowledge and skills. There are 2 types of Independent learning set in Physics e.g. Educake revision (an online platform that supports retrieval of knowledge) and past paper questions that develop exam literacy. Preparing for assessments is an essential part of each topic as each assessment allows teachers and students to see their progress. It is crucial that revision is completed so students can show what they know.