fortismere **KS5 Physics A Level Curriculum Map 2023-24**

Yr 12 (KS5)	**Topic Area**	**Key knowledge/skills (what has to be learnt)**	**Examples of key compulsory practicals for students**	**Knowledge/Skills revisited and to be revisited**	**Resources/support at home**
Teacher 1	**Measurement and errors**	A working knowledge of the specified fundamental (base) units of measurement. An awareness of the nature of measurement errors and of their numerical treatment. The ability to carry through reasonable estimations is a skill that is required.			Kerboodle Google classroom
	Mechanics	Vectors and their treatment are introduced followed by development of the understanding of forces, energy and momentum. The study of materials considered in terms of their bulk properties and tensile strength.	3. Determination of g by freefall	Revisiting from KS4 Energy (P1) and Forces (P8 to P11)	Kerboodle Google classroom
	Electricity	The relationship between current, voltage and resistance are explored in circuits and within different components. Resistivity, potential dividers and electromotive force with internal resistance.	5. Determination of the resistivity of a wire 6. Investigation of the EMF and internal resistance	Revisiting from KS4 Electricity (P4 to P5)	Kerboodle Google classroom
	Circular Motion	Consideration of circular motion including angular change and the related centripetal forces.		Revisiting from KS4 Forces (P8 to P11) and KS5 Mechanics and materials	Kerboodle Google classroom
Teacher 2	**Measurement and errors**	A working knowledge of the specified fundamental (base) units of measurement. An awareness of the nature of measurement errors and of their numerical treatment. The ability to carry through reasonable estimations is a skill that is required.			Kerboodle Google classroom

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	Materials	The study of materials considered in terms of their bulk properties and tensile strength.	4. Determination of the young modulus		Kerboodle Google classroom
	Waves and optics	A development of knowledge of the characteristics, properties, and applications of travelling waves and stationary waves. Interactions to explore include refraction, diffraction, superposition and interference.	1. Investigation into the variation of the frequency with stationary waves 2. Investigation of the effects of interference	Revisiting from KS4 Waves (P12 - P14	Kerboodle Google classroom
	Particles and radiation	The fundamental properties of matter at the atomic and subatomic levels (quarks) and the related interactions. The quantum nature of the photoelectric effect and wave-particle duality.		Revisiting from KS4 Matter and molecules (P6) and Radioactivity (P7)	Kerboodle Google classroom
Yr 13 (KS5)	**Topic Area**	**Key knowledge/skills (what <u>has</u> to be learnt)**	**Examples of key compulsory practicals for students**		**Resources/support at home**
Teacher 1	**Simple Harmonic Motion**	Analysis of characteristics of simple harmonic motion (SHM) including mass-spring systems and simple pendulums. Qualitative treatment of free and forced vibrations. Resonance and the effects of damping on the sharpness of resonance.	7. Investigating into SHM	Revisiting from KS4 Energy (P1), Waves (P12)	Kerboodle Google classroom
	Fields	The ideas of gravitation, electrostatics and magnetic field theory are developed to emphasise this unification. Practical applications considered include: planetary and satellite orbits, capacitance and capacitors, their charge and discharge through resistors, and electromagnetic induction.	9. Investigating charge and discharge of capacitors 10. Investigating how the magnetic force on a wire varies 11. Investigating the induced effects, using a search coil and oscilloscope	Revisiting from KS4 Electricity (P4) and Electromagnets (P15)	Kerboodle Google classroom

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	Astro - astrophysics	Fundamental physical principles are applied to the study and interpretation of the Universe. Students gain deeper insight into the behaviour of stars and their life cycles (including super novae and blackholes). Cosmology considers how the doppler effect under pins Hubble's Law and universe birth (the big bang) and death. The discovery of exoplanets is an example of the way in which new information is gained by astronomers.		Revisiting from KS4 Space (P16), Forces (P8 - P11) and KS5 Circular motion	Kerboodle Google classroom
Teacher 2	**Thermal**	Internal energy is the sum of the randomly distributed kinetic energies and potential energies of the particles in a body. The internal energy of a system is increased when energy is transferred to it by heating or when work is done on it (and vice versa), eg a qualitative treatment of the first law of thermodynamics. Appreciation that during a change of state the potential energies of the particle ensemble are changing but not the kinetic energies. Calculations involving transfer of energy. For a change of temperature: $Q = mc\Delta$ where c is specific heat capacity. Calculations including continuous flow. For a change of state Q = ml where l is the specific latent heat.		Revisiting from KS4 Energy (P2) and Matter and molecules (P6)	Kerboodle Google classroom
	Gases	Ideal gas laws explain experimental relationships between p, V, T and the mass of the gas. This is explained by the molecular kinetic model theory	8. Investigating gas laws	Revisiting from KS4 Forces (P11)) and Matter and molecules (P6)	Kerboodle Google classroom

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	Nuclear	Linking the properties of the nucleus to the production of nuclear power through the characteristics of the nucleus, the properties of unstable nuclei, and the link between energy and mass. With an awareness of the physics that underpins nuclear energy production and also of the impact that it can have on society.	12. Investigation of the inverse square law for gamma radiation	Revisiting from KS4 Radioactivity (P7)	Kerboodle Google classroom
	Astrophysics - astronomy	The underlying physical principles of the devices used to observe distant objects; telescopes, refracting telescopes, radio-dish telescopes and very large diameter telescopes.		Revisiting from KS4 Waves (P12-P14) and KS5 Waves and optics	Kerboodle Google classroom