KS5 Long Term Curriculum Plan: A LEVEL PHYSICS Year 12 2023-2024

Curriculum Aim:
In A Level Physics we extend on the knowledge of GCSE and aim to prepare, inspire and nurture a passion for physics, whilst laying the groundwork for further study in science or engineering. We do this by covering a wide range of topics including the fundamental units of measurement, properties of matter and electromagnetic radiation. Students gain an understanding of the importance of international collaboration in the development of new experiments and theories. Students learn essential practical skills throughout the course and are prepared to be analytic thinkers and problem solvers.

Link to prior learning: The subject builds on key knowledge and skills from GCSE Sciences, whilst diving deeper into key topics such as properties of matter, radiation, waves, vectors, force, energy and momentum.

Rationale of sequencing:
We begin the course by focusing and developing on essential skills from GCSE on the fundamental (base) units of measurement, prefixes and standard form. These underpin the content for all other topics covered, thus students learn the essential calculation skills to solve problems in the topics later in the course. Throughout all topics we practice essential practical skills beginning with the nature of measurement errors and of their numerical treatment. Topics link from one to another; we use continuous recall starters to embed content.

	Focus / Topic	Knowledge & Skills (from NC/Programmes of Study)	Assessment
Autumn 1 Autumn 2	Measurements and their errors Waves part 1 Particles and radiation Mechanics	Students will gain an understanding of: ● SI units, prefixes, uncertainties. Estimation. ● Progressive and stationary waves and the principle of superposition of waves. ● Constituents of the atom, and stable/unstable nuclei. ● Particles, antiparticles and photons. ● Particle interactions ● Classification of particles. Including quarks and antiquarks. ● Applications of conservation laws. ● Scalars and vectors. ● Moments. ● Motion along a straight line and Projectile motion. Students will develop key skills such as writing effective risk assessments and carry out experiments safely. Ability to calculate and manipulate data.	Paper 1 style exam on all content taught so far. **Assessment week (w/b 7th Nov 2022)**
Spring 1	Particles and radiation Mechanics Electricity	Students will gain knowledge of: ● The photoelectric effect. ● Collisions of electrons with atoms. ● Energy levels and photon emission. ● Wave-particle duality. ● Momentum. ● Work, energy and power. ● Conservation of energy. ● Newton's laws of motion. ● Current– voltage characteristics.	

		Students will develop key skills such as effectively recording experimental data and developing their observational skills. In additional graph analysis and extracting key information such as, determining g from a graph.	
Spring 2	Waves part 2 Materials Electricity	Students will gain knowledge of: ● Interference ● Diffraction ● Refraction at a plane surface. ● Bulk properties of solids. ● Resistivity. Circuits. Potential divider. Students will continue to develop key skills such as the ability to effectively design and plan an investigation, including explaining their choice of method. They will also practise skills such as using free-body diagrams, and rearranging equations.	2 x Year 1 style papers on all content covered to this date. 1 paper per teacher. **Assessment week (w/b 20th Feb 2023)**
Summer 1	Waves part 2 Materials Electricity Paper 3A skills	Students will gain knowledge of: ● Refraction at a plane surface. ● The Young modulus. ● Research and referencing skills ● Electromotive force and internal resistance They will continue to develop key practical skills such as comparing the use of analogue and digital meters. Estimating the volume of an object leading to an estimate of its density. Students will gain experience of tackling Paper 3A type questions on the 6 practicals covered.	
Summer 2	Thermal Physics part 1 Paper 3A skills	Students will gain knowledge of: ● Thermal energy transfer. ● Ideal gases. They will continue to develop key practical skills such as the ability to process and analyse data. Students will gain experience of tackling Paper 3A type questions on the 6 practicals covered.	End of year Mock based on Year 1 content. **End of Year exams (w/b 19th June 2023**

Further Information

The Course Specification https://filestore.aqa.org.uk/resources/physics/specifications/AQA-7407-7408-SP-2015.PDF

All topics will be assessed with an end of module exam (every 3-4 weeks). Practical skills will be assessed throughout the course during required practicals. Students are expected to complete 5 hours of additional study per week for this course.