KS5 Long Term Curriculum Plan: A LEVEL PHYSICS Year 13 2021-2022

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, Fields, Nuclear Physics, Further Mechanics and Astrophysics. 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 Year 1 of the course such as electricity and wave phenomena.
Rationale of sequencing: We begin the course by focusing on essential knowledge from Year 1 of the A level course and developing on the basics from GCSE, when learning about circular motion and electrical fields. This essential knowledge underpins key concepts in later topics. Throughout all topics we practice essential practical skills. 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	Further Mechanics Astrophysics Thermal Physics Fields : Electrical + Capacitors Fields: Gravitational	Students will gain an understanding of: • Circular motion and Simple harmonic motion. • Forced vibrations and resonance Newton's law. • Telescopes: lenses, reflecting, radio, I-R, U-V and X-ray. • Classification of stars by luminosity, magnitude and temperature. • Supernovae, neutron stars and black holes. • Molecular kinetic theory model. • Coulomb's law. • Electric field strength, electric potential, capacitance. • Capacitor charge and discharge. • Gravitational field strength and Gravitational potential. • Orbits of planets and satellites. Students will develop key skills such as the ability to design and carry out investigations, process and analyse data and the ability to write a detailed risk assessment.	Students will be assessed approximately every 4 weeks using End of Unit exams on each topic.
S**pri**ng 1	Astrophysics Fields : Magnetic Electromagnetic induction Nuclear Physics	Students will gain knowledge on: • Cosmology: • Doppler Effect. • Hubble's law. • Quasars. • Exoplanets.	1 x Year 1 Paper and 1 x Year 2 paper (on Year 2 content so far) **Mock week (w/b 5th Jan 2022)**

Spring 2		• Magnetic flux density. • Moving charges in a magnetic field. • Magnetic flux and flux linkage. • Electromagnetic induction. • Alternating currents. • Transformers. • Radioactivity. Rutherford scattering. α, β and γ radiation. Radioactive decay. • Nuclear instability and nuclear radius. • Mass and energy • Induced fission. • Nuclear power safety aspects. Students will develop key skills such as the ability to recording results effectively and make clear observations Students will develop key skills such as the ability to research and reference.	Students will be assessed approximately every 4 weeks using End of Unit exams on each topic.
Summer 1	Revision and Exam Technique	• Analyse, interpret and evaluate scientific information, ideas and evidence, including in relation to issues, to make judgements and reach conclusions. • Continue to practice mathematical equations and rearranging formula. • Practical skills	End of year in class mock examinations for all three papers.

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 practical's. Students are expected to complete 5 hours of additional study per week for this course.