

| Key Stage 5 (12) | |
|-----------------------------------|--|
| Course title: Physics A-Level | |
| Exam board: OCR A | |
| Specification code: H556 | |
| Autumn 1 (September – October) | Teacher 1: Practical Skills Practical skills are a vital part of the Physics A-Level and a solid introduction from the start is beneficial. Students will learn how to: <ul style="list-style-type: none"> • plan investigations, • design methods to collect accurate data, • use equipment such as micrometers and digital multimeters • present data according to conventions • analyse data graphically • evaluate methods and data (including uncertainty). |
| | Teacher 2: Mechanics: Scalars & Vectors, Energy and SUVAT A good understanding of vectors and scale diagrams is essential to the whole Mechanics topic so is introduced at the very start. These skills will be employed and revisited throughout A-Level. Work and energy is a fundamental concept in physics and this is a nice introduction to A-Level Mechanics as it builds on what has been studied at GCSE and requires low level maths skills. Motion graphs are familiar from GCSE, but the derivations take it up to A-Level standard. |
| Autumn 2 (October – December) | Teacher 1: Electricity Students studied electricity at GCSE so are reminded of the basics and use analogies to deepen their understanding. They then develop their knowledge with A-Level concepts such as calculations of resistors in parallel, the electron-Volt, internal resistance and potential dividers. The practical skills from the first half term are well employed in this topic. |
| | Teacher 2: Mechanics: Projectiles, Newton's Laws and Momentum Projectiles develop students' understanding of SUVAT by looking at two-dimensional motion. Newton's Laws are recapped from GCSE (and will be revisited later on in year 12) and more challenging ideas about Momentum are introduced, such as elastic and inelastic collisions. |
| Spring 1 (January – February) | Teacher 1: Waves Waves is more conceptually demanding, so students will start with a recap of wave properties from GCSE, but will quickly develop their knowledge to include polarisation, interference and standing waves. These topics are more demanding mathematically and practically. Introduces Young Double slit and diffraction gratings, as well as applying higher level maths to ideas about refraction from GCSE. |

| | |
|---|---|
| | <p>Teacher 2: Mechanics: More on Newton's Laws and Momentum Having studied the basic concepts in the autumn term, students will spend this time looking at more complex examples in context.</p> |
| <p>Spring 2 (February – March)</p> | <p>Teacher 1: Quantum Physics Quantum Physics is the first topic at A-Level that introduces something students are not familiar with from GCSE, so it is best taught at the end of key stage 5 (year 12). Students will look at the quantisation of energy and Einstein's photoelectric effect experiment as evidence of the particle model of light. They will go on to look at the wave model of particles and will discover that classical physics is unable to fully explain the behaviour of quantum-scale objects.</p> |
| | <p>Teacher 2: Mechanics - Materials In this topic students investigate the effect of forces on materials, building on what they have studied in mechanics and their applying their well-developed practical skills to determine the Young's Modulus of a metal. The practical work on springs will be revisited in the further mechanics module.</p> |
| <p>Summer 1 (April – June)</p> | <p>Teacher 1: Consolidation Required practical catch up and consolidation for AS practice assessment.</p> |
| | <p>Teacher 2: Consolidation Required practical catch up and consolidation for AS practice assessment.</p> |
| <p>Summer 2 (June – July)</p> | <p>Teacher 1: Thermal Physics Students have studied kinetic theory, SHC and gases in both physics and chemistry GCSE so this topic builds on that. Students also taking A-Level chemistry will have studied gas laws in key stage 5 (year 12). This is a concrete topic, with lots of practical work to give students confidence as they start key stage 5 (year 13), which then develops to include complex derivations of rms speed equation.</p> |
| | <p>Teacher 2: Gravitational fields Gravitation is the most straightforward fields topic so comes first in the key stage 5 (year 13) sequence. It uses knowledge from the key stage 4 (year 11) Forces topic and builds to some complex derivations of Kepler's 3rd Law. It also fits well before circular motion so that students have a concrete example to base their understanding on.</p> |