	Intent: A working knowledge of the specified fundamental (base) units of measurement is vital. Likewise, practical work in the subject needs to be underpinned by an awareness of the nature of Physical phenomena and measurement errors and of their numerical treatment. The ability to carry through reasonable estimations is a skill that is required throughout the course and beyond. These skills have been brushed upon at GCSE but expanded much more fully during the year 12 course.				
Year 12 Physics	**Measurements and errors (September to December)**	**Electricity (September to December)**	**Particles and radiation (September to February)**	**Waves (January to April)**	**Mechanics (January to April)**
Knowledge (facts, information, concepts and key terminology)	• Conversion of SI units • Re-arranging formulae • % errors in measurements • Practical limitations • Calculating boundaries for results	• Current, voltage, charge and their respective units • Detailed knowledge of circuit components including thermistors, LDRs and rheostats	• All subatomic particles and their interactions & classifications • Application of conservation laws such as baryon number	• Uses of wave function • Wave particle duality • Progressive and stationary waves • Superposition of waves • Refraction and diffraction in optics	• Moments • SUVAT equations • Projectile motion • Terminal velocity • Newton's laws • Momentum • Stress/strain
Understanding (ability to connect and synthesise knowledge within a context)	• Apply above concepts into practical and CPAC-based practicals in the lab book • Identify and explain known errors and the implications for conclusions • Estimating values	• Voltage now in terms of joules per coulomb of charge and current as coulombs per second • Uses of potential dividers • Uses of thermistors and LDRs	• Ability to use skills from unit 1 (measurements) and apply these to subatomic calculations • Able to identify particles from their characteristics	• Ability to use skills from unit 1 (measurements) and apply these to wave equations • Uses of wave function and optic phenomena • Application of first harmonic equation	• Able to apply formulae to given problems • Ability to apply the Young modulus • Able to use the basic ideas of Newtonian mechanics and their implication in context
Skills (successful application of knowledge and understanding to a specific task)	• Ability to identify when results from experiment may be compromised by equipment or systemic errors. • Able to factor these in and conclude impact on results	• Able to build complex circuits that serve a specific function (eg heat triggered) • Ability to calculate resistance values given a circuit diagram and values	• Ability to calculate wavelengths and frequencies using a given equation • Able to use physical constants to solve problems (eg Planck)	• Ability to calculate refraction at planes • Derivation of $d\sin\theta = n\lambda$ • Using and interpreting diffraction patterns • Awareness of safety issues around lasers	• Awareness of safety issues surrounding mechanical testing (eg stretched wires) • Interpret and analyse graphical data to come to reasoned conclusions
Formal Assessments (those done by all/vast majority of the cohort)	• End of topic test • Year 12 test week inclusion • Included in March mocks & EOY test • Past paper questions as homework • CPAC practical skills				
By the end of the year students on course for at least a grade C will be able to identify and apply equations to solve problems presented. They should be able to use the equations booklet with efficiency and know where each section and equation would be found. In addition, they should identify problems that require a known constant and find this in the same equations booklet. They will need to be able to apply skills learnt during practical's to exam questions, identifying possible errors and their implications on the results, giving a range of results and possible conclusions. Finally, students will need to recall key facts such as particle names and their properties and apply these in a conservation context.					