Year Group: 12	Subject: Physics	Term: Spring 2022
Topic	**Key Learning points**	**Assessment**
Topic 4: materials	*End Point: To understand the determine the Young modulus from a graph of stress against strain of various materials. Carry out a detailed analysis of uncertainties and to compare their measured values with those from a data book.* • understand Hooke's law and be able to make calculations using it • calculate the elastic strain energy stored in a deformed material sample • estimate the elastic strain energy stored from a force–extension graph for a sample • calculate tensile/compressive stress • calculate tensile/compressive strain • calculate the Young modulus. • interpret stress–strain graphs • understand and apply the terms limit of proportionality, elastic limit, yield point, breaking stress, elastic deformation and plastic deformation in relation to stress–strain graphs. • Core Practical 5: Determine the Young modulus of a material. • This might have been carried as part of the previous section.	Students will be formatively assessed during each topic by past paper questions completed in lesson time. • Students will complete homework assignments as ongoing assessment of understanding. • Teachers will provide students with targeted feedback, based on their test performance. At the end of the term students will have a summative assessment. This will be a 60-mark exam paper which will be marked by their teacher.
Topic 5: waves and particle nature of light	*End Point: To understand the mechanisms of waves and be able to explain how our understanding of polarisation occurs using various filters* • Understand what is meant by refraction • Use Snell's law equation • Understand how to measure the refractive index of a solid • Understand that waves can be reflected and transmitted at a media interface • Understand what is meant by critical angle, and how it can be calculated • Be able to predict if TIR can occur at an interface • Understand that lenses focus light rays, and explain how converging and diverging lenses affect light rays • Explain the terms focal length and power of a lens • Use the equation for power of single lens, and lens combination • Trace the 3 principle rays through a converging and a diverging lens • Understand the terms real and virtual when relating to images. • Use the lens formula to calculate image magnifications • Understand what is meant by plane/linear polarisation • Describe how polarisation can be used to investigate stresses in a material • Describe how light can pass through three polarising filters even if two are at right angles	