	Sequence		
TOPIC (S) **Waves**	1. Progressive Waves 2. Longitudinal and Transverse Waves 3. Principles of superposition of waves and formation of stationary waves	4. Required Practical 1: Stationary waves on a string 5. Interference 6. Required Practical 2: Young's Double Slits	7. Diffraction 8. Refraction at a plane surface
Knowledge & Skills development	• Describe waves in terms of amplitude, frequency, wavelength, speed, phase, phase difference • Describe the nature of longitudinal and transverse waves • Describe polarisation and explain its effects • Explain the formation of stationary waves and perform calculations to determine the frequency of the first harmonic • Investigation into the variation of the frequency of stationary waves on a string with length, tension and mass per unit length of the string • Describe and explain interference and diffraction using a laser as a source of monochromatic light		• Describe and explain interference produced with sound and electromagnetic waves • Describe appearance of the diffraction pattern from a single slit using monochromatic and white light. • Derive the equation to describe the diffraction of light through a diffraction grating • State applications of diffraction gratings • Use Snell's law to describe refraction at a plane surface • Simply describe the function of optical fibres including the cladding • Explain material and modal dispersion and describe methods to limit the effect of these

Assessment / Feedback Opportunities	Exam questions – teacher assessed	Exam questions – self assessed	Extended writing task – teacher assessed	Deep marking of required practical write-up in lab books	Topic assessment
Cultural Capital	• •				
SMSC / Promoting British Values (Democracy, Liberty, Rule of Law, Tolerance & Respect)	• •				
Reading opportunities	• Recommended Read: Waves: A Very Short Introduction (Very Short Introductions) Paperback – 22 Nov 2018 by Mike Goldsmith (Author)				
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest, Absolute, Uncertainty, Error Amplitude, Frequency, Wavelength, Oscillation, Phase Difference, Path Difference, Longitudinal, Transverse, Polarisation, Plane, Node, Antinode, Equilibrium, Interference, Harmonic, Monochromatic, Coherent, Diffraction, Superposition, Grating, Model Dispersion, Stationary, Fringe, Maxima, Minima, Optical, Fibre, Refraction				

Digital Literacy	The use of excel to plot graphs and analyse data MSOffice365 apps including SharePoint
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators
Careers	Communications