

Term	Week	Focus	Summary	Learning Outcomes	Learning skills
Term 1.1	1	Basic Wave Properties and Wave Equation	Introduction to fundamental wave properties and their relationship	Understand terms amplitude, frequency, period, speed, wavelength, and use the wave equation $v = f\lambda$	Critical thinking, Linking
	2	Types of Waves	Examining longitudinal and transverse waves and their characteristics	Describe longitudinal waves and transverse waves, including pressure variation and displacement of molecules	Critical thinking, Real-world applications
	3	Wave Graphs and Wave Concepts	Graphing and interpreting waves and understanding complex wave properties	Draw and interpret graphs of waves and understand wavefront, coherence, path difference, superposition, interference, and phase	Critical thinking, Real-world applications
	4	Practical Work on Waves	Practical work on the speed of sound and vibrating strings	Determine the speed of sound in air and investigate the effects of length, tension, and mass per unit length on a vibrating string	Collaboration, Planning for success
	5	Phase Difference and Stationary Waves	Exploring phase difference and stationary waves	Use the relationship between phase difference and path difference, understand how a stationary wave is formed and identify nodes and antinodes	Meta-learning, Real-world applications
	6	Wave Speed and Intensity of Radiation	Computing wave speed and examining radiation intensity	Use equations for wave speed on a string and radiation intensity	Critical thinking, Real-world applications
	7	Refraction and Reflection	Application of refraction and reflection at the interface between mediums	Understand and calculate critical angle, measure the refractive index of a solid material, and predict if total internal reflection will occur	Meta-learning, Real-world applications



Term 1.2	1	Polarisation and Diffraction	Exploring the concepts of plane polarisation and diffraction	Understand plane polarisation and Huygens' construction, use $n\lambda = d\sin\theta$ for a diffraction grating	Critical thinking, Real-world applications
	2	Light and Diffraction Practical	Practical work on light and diffraction	Determine the wavelength of light using a diffraction grating, understand how diffraction provides evidence for wave nature of electrons	Collaboration, Planning for success
	3	Wave Properties and Reflection	Application of wave properties and reflection at an interface	Understand that waves can be transmitted and reflected at an interface and how a pulse-echo technique can provide information about an object's position	Meta-learning, Real-world applications
	4	Electromagnetic Radiation Models	Examining wave and photon models of electromagnetic radiation	Understand how electromagnetic radiation behaviour can be described by these models and how they developed over time	Critical thinking, Real-world applications
	5	Photon Energy and Photoelectric Effect	Exploring photon energy and the photoelectric effect	Use the equation $E = hf$, understand that photon absorption can lead to photoelectron emission and understand threshold frequency and work function	Meta-learning, Real-world applications
	6	Small Energies and Photoelectric Effect	Using electronvolts and understanding the particle nature of electromagnetic radiation	Use the electronvolt (eV) to express small energies and understand how the photoelectric effect provides evidence for particle nature of electromagnetic radiation	Critical thinking, Real-world applications
	7	Atomic Line Spectra	Application of atomic line spectra and energy transitions	Understand atomic line spectra in terms of transitions between discrete energy levels and calculate the frequency of radiation that could be emitted or absorbed in a transition	Critical thinking, Real-world applications
	8	Midterm Review and Exam	Review of key concepts and Midterm Examination.	Demonstrate understanding of the topics covered so far.	Critical Thinking, Problem Solving, Meta-cognition