



Subject: Physics 1

NPCAT Curriculum Overview 2021-2022

Teacher 1	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
End point	To develop scientific knowledge and conceptual understanding of the following topics:					
Teaching focus	Module 2: Foundations of physics	Module 4: Electrons, waves and photons			Module 5 - Newtonian world and astrophysics	
	Foundations	4.1 Charge & current 4.2 Energy, power and resistance	4.3 Electrical circuits 4.4 Waves	4.5 Quantum physics	5.2 Circular motion 5.3 Oscillations	
Rationale	The aim of this module is to introduce conventions and ideas that permeate all of physics.	In this module, learners will learn about electrons, electric current, electrical circuits, wave properties, electromagnetic waves and, of course, quantum physics.			This section provides knowledge and understanding of circular motion and important concepts such as centripetal force and acceleration. This section provides knowledge and understanding of simple harmonic motion, forced oscillations and resonance.	
Maths skills	M0.1, M0.4, M0.6, M1.5, M4.2, M4.4, M4.5	M0.2, M2.2, M3.12	M2.3, M4.6	M2.3	M2.2, M2.4, M3.9, M3.12, M4.7	
Practical skills	Making measurements Tables and Graphs Analysing Data Describing a Method	Resistivity of a metal	Investigating electrical circuits Determining wavelength with diffraction grating	Planck constant	Factors affecting SHM	



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Key Vocab	Absolute uncertainty, percentage uncertainty	Kirchoff's laws, drift velocity	Electromotive force, potential divider, superposition, refraction, total internal reflection, polarisation	Photoelectric effect, threshold frequency, de Broglie wavelength	Simple harmonic motion, resonance, natural frequency, damping, radians	
Summative assessment		AP1- Motion and forces, fundamentals		AP2 - AS paper		A-level paper 1 and 3 (minus questions on space)

Teacher 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
End point	To develop scientific knowledge and conceptual understanding of the following topics:					
Teaching Focus	Module 3: Forces and motion				Module 5 - Newtonian world and astrophysics	
	3.1 Motion 3.2 Forces in action	3.3 Work, energy and power 3.4 Materials	3.5 Newton's laws of motion and momentum	Intervention	5.1 Thermal physics	
Rationale	In this module, learners will learn how to model the motion of objects using mathematics, understand the effect forces have on objects, learn about the important connection between force and energy, appreciate how forces cause deformation and understand the importance of Newton's laws of motion.			This half term is used to recap topics students found difficult, or to make up for time lost through unforeseen circumstances.	This section provides knowledge and understanding of temperature, matter, specific heat capacity and specific latent heat with contexts involving heat transfer and change of phase. It also provides an opportunity to discuss how Newton's laws can be used to model the behaviour of gases and significant opportunities for the analysis and interpretation of data.	
Maths Skills	M0.1, M0.6, M1.1, M1.4, M2.1, M2.2, M2.4, M3.3, M3.4,	M0.3, M0.5, M3.1, M3.2, M3.12	M2.1, M3.8, M3.9, M4.3		M0.1, M0.2, M1.1, M2.2, M2.3, M3.2, M3.3, M3.4	



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	M3.5, M3.6, M3.7, M3.9, M4.1, M4.2, M4.3, M4.4, M4.5				
Practical skills	Acceleration of free fall	Determining Young Modulus Material presentation			Estimating absolute zero from gas pressure and volume Determining the specific heat capacity of a material
Key Vocabulary	Displacement, velocity, acceleration, torque, principle of moments, Archimede's principle	Conservation of energy, Young modulus, limit of proportionality	Impulse, linear momentum, rate of change of momentum		specific heat capacity, specific latent heat, internal energy, root mean square speed, Boltzmann constant
Summative Assessment		AP1- Motion and forces, fundamentals		AP2 - AS paper	A-level paper 1 and 3 (minus questions on space)