Exam Board: Pearson Edexcel Level 3 Advanced GCE in Physics (9PH0)

Year 12

Year Group	Term	Theme	Topics Teacher 1 Teacher 2	CPAC Number	Content (9 lessons a fortnight in y12)	Assessment Content
12	1	Electric Circuits and Mechanics	Electric Circuits: Charge and current, Potential difference, emf and power, Current-potential difference relationships. Mechanics: Quantities and units, Mechanics, Rectilinear motion,	CPAC1	In the first term, we extend the foundation topics from GCSE to applying these to new ideas that look at the relationships and behaviours of quantities in circuits, Potential Dividers as well as equations of motion and Newton's Laws. We also look at the correct application of good scientific method to practical skills and experiments.	Synoptic tests at the end of each topic ensures that students are constantly reviewing previous topics. Assessments consist of a variety of short answer/long answer questions with a set of multiple-choice questions. Y12 PPE's
	2	Electric Circuits and Mechanics	Electric circuits: Resistance and resistivity, Internal resistance, series and parallel circuits, and the potential divider. Mechanics: Forces, Work, energy and power	CPAC2 CPAC3	This term develops the content from term 1 and applies it to drift velocity and concentration of free electrons as well as looking at the internal resistance of a circuit. The mechanics this term focusses on resolving vectors and applying these to Projectile Motion.	
	3	Waves and Materials	Waves: Nature of waves and Transmission and reflection of waves. Materials: Fluids and Solid materials	CPAC4 CPAC6	We introduce the concept of refractive index and investigate the behaviour of waves, particularly light, as it interacts with changing media. We develop the idea of drag using Stoke's Law and apply this to terminal velocity.	
	4	Waves and Materials	Waves: Superposition of waves Materials: Solid materials continued and particle nature of light.	CPAC5 CPAC7 CPAC8	The concept of interaction between waves is looked at in "Superposition of Waves" and the effects of constructive and destructive interference are investigated. The behaviour of materials under stress is looked at and applied to elastic and plastic deformation. We also consider the wave-particle duality of light and look at the relationship between wavelength and momentum.	

	5	Revision	Revision for Y12 ppe's		We consolidate and test the content covered throughout the year and prepare students for the format of examination style questions.	
	6	Year 13 Preparation	Yr 13 Intro		We introduce the Yr13 topics of capacitance and circular motion that build off topics covered in Yr12.	

Year 13

Year Group	Term	Theme	Topics Teacher 1 Teacher 2	CPAC Number	Content (9 lessons a fortnight in y13)	Assessment Content
13	1	Fields, Mechanics and Thermo-dynamics	Electric and magnetic fields: Capacitance, Gravitational fields and Universal gravitation. Further mechanics: Motion in a circle, Thermodynamics, Specific heat capacity, Internal energy, absolute zero and change of states.	CPAC 11 CPAC 9 CPAC 10	We extend the concept of magnetic field to include electric and gravitational fields. This is applied to investigate Universal Laws of Gravitation. We introduce Thermodynamics and consider the case of absolute zero.	Synoptic tests at the end of each topic ensures that students are constantly reviewing previous topics. Assessments consist of a variety of short answer/long answer questions with a set of multiple-choice questions. Y13 PPE's
	2	Fields, Mechanics, Thermo-dynamics and Nuclear Physics	Electric and magnetic fields, Electric fields Thermodynamics: Gas laws and kinetic theory, Nuclear and particle physics, Electrons and nuclei and Particle physics.	CPAC 12 CPAC 13 CPAC 14	We take Newton's Laws and apply these to particle motion and its ramifications in regards to energy, pressure and temperature. The exponential growth and decay of capacitance is investigated and applied in the CPAC.	
	3	Astrophysics and Nuclear Physics	Space Astrophysics Nuclear radiation: Nuclear decay	CPAC 15	We analyse nuclear decay and relate half-life to the decay constant. The structure of the nucleus is developed to consider baryons and hadrons. We look at the design of particle accelerators. We describe the evolution of the universe in more detail using the Hertzsprung-Russell diagram.	
	4	Oscillations and Astrophysics	Oscillations: Oscillations Space Cosmology	CPAC 16	We introduce the idea of resonance, which can be linked, to standing waves. The idea of damping is introduced to control vibrational responses.	

					We use the Doppler effect and red shift to find the value for the age of the universe.	
	5	All themes	Review of Y13 work.	N/A	Revise and review the content in the course.	A LEVEL EXAMINATIONS
	6	All themes	Review of Y13 work.	N/A	Revise and review the content in the course.	