



QPHS Year 12 Physics Curriculum Map

Half term	Title	Unit summary	Assessment
1	Particle Physics & Quantum Phenomena	Students will learn about: <ul style="list-style-type: none"> • Particles, antiparticles and photons • Fundamental particles and their interactions • Photoelectric effect and energy levels 	<ul style="list-style-type: none"> • Assessed homework – Atoms, isotopes and antiparticles • Assessed homework – Fundamental particles and interactions • Assessed homework – Quantum Phenomena • End of topic assessment on particle physics and quantum phenomena
2	Waves	Students will learn about: <ul style="list-style-type: none"> • Progressive and stationary waves • Interference including Young's double slit and diffraction gratings • Reflection, refraction and total internal reflection 	<ul style="list-style-type: none"> • Assessed homework – Wave behaviour and superposition • Assessed homework – Wave interference • Assessed homework – Refraction and TIR • End of topic assessment – waves with cumulative knowledge from quantum phenomena • Required practical 1 - Investigation into the variation of the frequency of stationary waves on a string with length, tension and mass per unit length of the string • Required practical 2 - Investigation of interference effects to include the Young's slit experiment and interference by a diffraction grating
3	Mechanics	Students will learn about: <ul style="list-style-type: none"> • Forces including moments • Linear motion and projectile motion • Momentum and energy conservation 	<ul style="list-style-type: none"> • Assessed homework – Vectors and moments • Assessed homework – Motion graphs • Assessed homework – Projectile motion • Assessed homework – Momentum and energy • End of topic assessment – mechanics with cumulative knowledge from waves • Required practical 3 - Determination of g by a freefall method
	Materials	Students will learn about: <ul style="list-style-type: none"> • Density of materials • Elastic and plastic behaviour of materials • Determination of the Young modulus through measurement of stress and strain of materials 	<ul style="list-style-type: none"> • Assessed homework – Material physics • End of topic assessment – materials with cumulative knowledge from mechanics • Required practical 4 - Determination of the Young modulus by a simple method
4	Electricity	Students will learn about: <ul style="list-style-type: none"> • Current, potential difference, resistance and resistivity • Kirchhoff's circuit laws and potential dividers • Electromotive force and internal resistance 	<ul style="list-style-type: none"> • Assessed homework – Resistance & I-V graphs • Assessed homework – Resistivity & emf • Assessed homework – Potential dividers • End of topic assessment – Electricity with cumulative knowledge from particle physics • Required practical 5 – Determination of resistivity of a wire using a micrometer, ammeter and voltmeter • Required practical 6 - Investigation of the emf and internal resistance of electric cells and batteries by measuring the variation of the terminal pd of the cell with current in it
5	Further Mechanics	Students will learn about: <ul style="list-style-type: none"> • Circular motion, including angular speed and centripetal force • Simple harmonic motion and systems • Forced vibrations and resonance 	<ul style="list-style-type: none"> • Assessed homework – Circular motion • Assessed homework – Simple harmonic motion • End of topic assessment – Further mechanics with cumulative knowledge from mechanics • Required practical 7 - Investigation into simple harmonic motion using a mass-spring system and a simple pendulum
6	Radioactivity & Nuclear Energy	Students will learn about: <ul style="list-style-type: none"> • Revision for mocks • Nuclear instability and radioactive decay 	<ul style="list-style-type: none"> • Assessed homework – Radioactive isotopes, decay equations and inverse square law • Required practical 12 – Investigation of the inverse-square law of gamma radiation