



Curriculum Map: Year 10 Subject: GCSE Physics (Separate Science) Exam Board: AQA

Topic	Key Knowledge <i>What will all students KNOW by the end of the topic?</i>	Key Skills <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	Assessment Opportunities <i>What are the key pieces of assessment? How will students be assessed?</i>
Atomic Structure	<ul style="list-style-type: none"> - Recap of atoms & isotopes (from start of Year 9 Chemistry & end of year 9 Physics) - Radioactive decay & nuclear radiation - Nuclear equations - Half-lives - Contamination, irradiation & their hazards - Hazards & uses of radioactive emissions - Background radiation - Nuclear fission & fusion 	<ul style="list-style-type: none"> - Recall key terminology including the nature of alpha, beta & gamma decay - Balance nuclear equations - Use graphs & calculations in relation to half-lives - Interpretation of data & application of knowledge to problem solving - Apply their knowledge of nuclear radiation to evaluate the best source of radiation to use in a given situation - Evaluate the perceived risk of using nuclear radiations in relation to given data 	<ul style="list-style-type: none"> - Analysis of practical results - PPQ -Homework - Half life modelling and graph interpretation - Graph analysis - starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval - PPQ -AfL throughout lessons - Homework Tasks - Analysis of Risk with Nuclear Forces -Assessment 1 -Assessment 2 -Mocks
Electricity	Recap of Current Electricity, Resistance from Year 9 <ul style="list-style-type: none"> - Series & parallel circuits - Required practical 4 – IV graphs (in 3 parts – resistor, filament lamp & diode) - Ohm’s law & resistance - Thermistors & LDRs - Mains electricity & the National Grid 	<ul style="list-style-type: none"> -Building simple circuits - Calculations involving current, energy, charge, p.d. & time - Use of models to understand the unobservable - Building more complex circuits & taking measurements 	<ul style="list-style-type: none"> - Analysis of practical results - PPQ - Required Practical Skills - Graph analysis - starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval

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	<ul style="list-style-type: none"> - Transferring energy & power - Static charge - Electric fields 	<ul style="list-style-type: none"> -Plot and draw appropriate graphs selecting appropriate scales for the axes. - Lines of best fit - Method writing and identifying variables - Linking ideas between forces and Electric Fields -Linking to Magnets from KS3 	<ul style="list-style-type: none"> - PPQ -AfL throughout lessons - Homework Tasks - Calculation Questions -Assessment 1 -Assessment 2 -Mocks -Required Practical 4- Resistance of Components
Energy	<ul style="list-style-type: none"> - Calculations using work done, GPE, KE and EPE equations - Energy as a quantity that can be calculated 	<ul style="list-style-type: none"> -Use of increasingly complex formulae in calculations (e.g. squared terms) - Calculations involving rearranging (now including the need to use the square-root function) - Use of correct units 	<ul style="list-style-type: none"> - starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval - PPQ -AfL throughout lessons - Homework Tasks - Calculation for GPE, KE and EP -Assessment 1 -Assessment 2 -Mocks
Particle Model of Matter	<ul style="list-style-type: none"> -Using the particle model of matter explain motion of particles in a gas. -How gases exert forces on the walls of their containers. -How changing the temperature of a gas affects the pressure exerted -How changing the pressure of a gas affects the volume of the gas (and vice versa). -How pressure and volume of a gas are linked. (Boyle's Law) 	<ul style="list-style-type: none"> -Graph plotting and choice of appropriate scale (e.g. y axis does not need to start at 0) -Explanatory answers needing to be in appropriate depth for the number of marks on offer 	<ul style="list-style-type: none"> - Analysis of practical results - PPQ -Homework - Modelling and graph interpretation - Graph analysis - starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval - PPQ

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	<ul style="list-style-type: none"> -Work done on a gas and the change in internal energy caused 		<ul style="list-style-type: none"> -AfL throughout lessons - Homework Tasks -Assessment 1 -Assessment 2 -Mocks
<p>Waves</p>	<ul style="list-style-type: none"> - Transverse & longitudinal waves - Properties of waves & wave speed - Frequency & Time Period - Required practical 8 -Speed of a wave in a solid & in a ripple tank (in 2 parts) -Sound waves <ul style="list-style-type: none"> - Waves for detection and exploration - Ultrasound waves & their use <ul style="list-style-type: none"> - Seismic waves and their part in discoveries about the Earth's structure - Required practical 9 – reflection & refraction of light - Reflection of waves - Refraction of waves - Lenses - Opaque, transparent & translucent objects <ul style="list-style-type: none"> - Use of coloured filters - Colours of light and their perception to the human brain - Uses of dangers of EM Waves 	<ul style="list-style-type: none"> - Recall key terminology on the anatomy & behaviour of waves - Identify the suitability of apparatus to measure the frequency, wavelength & speed of waves (in the required practical) - Be able to determine the uncertainty in a set of measurements - Calculations & equation recall from an ever-increasing list - Draw ray diagrams to show reflection of waves - Draw ray diagrams to show refraction of waves - Draw wave front diagrams to illustrate refraction - Construct ray diagrams to illustrate the similarities and differences between convex and concave lenses - Recall key terminology used to describe images (e.g. real & virtual; upright & inverted) - Recall key terminology related to the absorption & transmission of light (opaque, transparent & translucent) - Explain the perception of colour due to the absorption, transmission and reflection of different wavelengths of light -State the order of the EM waves and their magnitudes 	<ul style="list-style-type: none"> - Analysis of practical results - PPQ -Homework - Ray Diagrams - Graph analysis - starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval - PPQ - Calculations of Uncertainty -AfL throughout lessons - Homework Tasks - Analysis of Risk with Nuclear Forces -Assessment 1 -Assessment 2 -Mocks -Required Practical 8 – Properties of a Wave

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		-Explain how the properties of the EM Waves is due to their frequency.	
Space -Summer Work	<p>Our solar system</p> <ul style="list-style-type: none"> - The lifecycle of a star & formation of the elements -Orbital motion, natural and artificial satellites - Red-shift & its support of the Big Bang theory 	<ul style="list-style-type: none"> - Connection to Atomic Structure and fusion - Explain how fusion processes lead to the formation of new elements - Connection to Forces (Newton's Laws) to explain the equilibrium between the gravitational collapse of a star and the expansion of a star due to fusion energy - Connection to Forces to explain how for circular orbits the force of gravity can lead to changing velocity but unchanged speed . - Connection to Waves to explain the observed increase in wavelength of light from galaxies that are moving away from the Earth 	<ul style="list-style-type: none"> -Marking of Research and Tasks carried out at home. - Assessments - PPQ - Mocks