

Curriculum Map: Year 10 Physics

	Half Term 1	Half Term 4 and 5
Topic	Atoms and Isotopes	Forces and Motion
Intent	Students will develop their existing knowledge of atoms and isotopes, linking their knowledge from Chemistry and explore how the model of the atom has changed over time. They will link this knowledge to new learning on radioactivity and decay and associated hazards.	To learn about how forces interact with objects. Students will learn in depth the concept of vectors and scalars and their purpose in understanding interactions between objects through contact or non-contact means. Newton's laws of motion will be studied in greater detail whereby students will complete a required investigation into Newton's 2nd law. A further study of Hooke's law and learning about the graphical representation will be completed.
Key Knowledge	<ul style="list-style-type: none"> • The structure of the atom. • How the atomic model was developed. • The properties of alpha, beta and gamma radiation. • How to calculate half lives. 	<ul style="list-style-type: none"> • The difference between scalars and vectors followed resultant forces and their connection to acceleration. • Calculate the resultant of a number of forces acting parallel to each other. • Plastic deformation of materials. • Sketch and describe the force and extension curve of an elastic material when stretched beyond its limit of proportionality. • Define speed and calculate it by using speed = distance/time. • Calculate the speed of an object from a distance – time graph. • Draw and interpret velocity – time graphs. • Explain how the acceleration of an object can be found from a velocity – time graph.
Key Skills	<ul style="list-style-type: none"> • Accurate use of scientific vocabulary and terminology. • Explain how data can be used to justify the change of scientific models. • Evaluate risks of hazards associated with radioactivity. • Maths Skills – applying new formula in familiar and unfamiliar contexts. • The application of collected data into graphs and for analysis. • Practical skills: reading measuring equipment with accuracy and precision, taking repeats, following methods. 	<ul style="list-style-type: none"> • Accurate use of scientific vocabulary and terminology. • Research methods used by the police/council to determine whether motorists are speeding. • Maths Skills – applying new formula in familiar and unfamiliar contexts. • The application of collected data into graphs and for analysis. • Practical Skills: reading measuring equipment with accuracy and precision, taking repeats, following methods.

Key Vocabulary	Nucleus, charge, proton, neutron, electron, isotope, half life, radiation, alpha, beta, gama, ionising, plum pudding, Bohr model, nuclear, radioactive, hazard.	Force. Friction, air resistance, weight, elastic, inelastic deformation, terminal velocity, scalar , vector, Newton, velocity, displacement, resultant force , joules, acceleration, motion.
Key Reading	BBC bitesize GCSE Combined Science CGP revision guide Knowledge organisers	BBC bitesize GCSE Combined Science CGP revision guide Knowledge organisers
End Point	Students are competent in answering structured and longer response exam style questions and recall the scientific equations.	Students are competent in answering structured and longer response exam style questions and recall the scientific equations. Required practical: Investigate the relationship between force and extension for a spring. (10.2.18) Required practical Investigate the effect of varying the force on the acceleration of an object of constant mass, and the effect of varying the mass of an object on the acceleration produced by a constant force. (10.2.19)
Form of Assessment	Exam Ready Questions End of topic test Pupils given a percentage and GCSE equivalent grade. Formative feedback provided.	Exam Ready Questions End of topic test Pupils given a percentage and GCSE equivalent grade. Formative feedback provided.
Enrichment Opportunities	As Universities start to offer science-based workshops again Y10 will be given the opportunity to take part. Linked with Duke of Edinburgh there is an opportunity for some students to gain hands on experience in a science career with a Science technician as part of their skills or volunteering section.	
Leadership Opportunities	Chances to formally present within lessons and take ownership of that process. Student helper to support other students especially in required practicals. Student example to demonstrate good quality work	



AMBITION



RESILIENCE



COURTESY



KINDNESS