



# Curriculum Map



**Subject:** Science PHYSICS

**Year group: 10**

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1 + 2</b>
<b>Content</b>  <i>Declarative Knowledge</i> – <i>'Know What'</i>	Phy 1: How energy is transferred and how we measure the rate of transfer. How energy changes are related to temperature changes. How rate of cooling can be affected. The environmental impact of different fuels.	Phy 2: Causes of static electricity and possible effects. Define current, resistance and potential difference. Characteristics of series and parallel circuits. Ohm's Law – components that obey and do not obey it. The safe use of electricity at home.	Phy 3: Definition of specific heat capacity, impact of water's high shc. The particle model explanation of changes in state. Definition of specific latent heat of fusion and vaporisation. Changes to gas pressure when temperature changes and volume remains constant. The relationship between gas pressure and volume.	Phy 4: The structure of atoms, including isotopes. How radioisotopes decay. Details of radioactive decay: characteristics of alpha, beta, gamma particles. Nuclear fission and fusion. Uses of nuclear radiation in medicine and elsewhere.	Phy 5: Describing motion: acceleration as changes to speed. Describing momentum. Apply understanding of forces to safe driving: air bags, seat belts, crumple zones – reduce rate of momentum change. Definition of thinking distance, braking distance – factors affecting these. Causes of pressure in fluids. Motion of objects in freefall. Forces as Contact or non-contact.
<b>Skills</b>  <i>Procedural Knowledge</i> – <i>'Know How'</i>	How we monitor the transfer of energy. Drawing Sankey diagrams. The use of fossil fuels is changing as more renewable energies are being used. How to investigate the specific heat capacity of materials. How to investigate the ways of reducing unwanted energy transfers.	Safe wiring of a plug. To construct electrical circuits. To investigate the I-V characteristics of a filament lamp, diode and resistor. To investigate the factors affecting resistance for; changing length of wire and combinations of resistors.	To investigate the density of regular and irregular shaped objects.	How to write nuclear equations to represent nuclear decay. How to take account of background radiation. How to draw graphs showing nuclear decay and use them to calculate half-life.	How forces can change an objects' speed. How to investigate the acceleration of an object. The relationship between force and extension in a spring.
<b>Key Questions</b>	How much energy is being transferred? Used? Wasted? How can we prevent energy loss in this situation? What is the impact of using this energy source?	What safety systems are in place to prevent harm or damage? How does changing xxxx affect yyyy? What are the I-V graphs for a constant temperature resistor? Diode? Lamp?	What is happening during this change in state? What is the specific heat capacity of water? What happens to gas pressure when temperature changes?	What is the difference between contamination and irradiation? How does this element change following specific decay? What is the half-life of xxx? Evaluate the dangers and uses of radioisotopes.	
<b>Assessment</b>	Phy1 topic test – exampro.	Phy 2 and 1 topic test – exampro.	Phy 3, 2 and 1 topic test – exampro.	Phy 4, 3, 2, 1 topic test exampro.	Year 10 PPE –April: Paper 1 content. Phy 5 topic test.
<b>Literacy / Numeracy / SMSC / Character</b>	Calculating efficiency. Use equations for kinetic energy, gravitational potential energy, power, work done, energy transferred, specific heat capacity. Using significant figures in calculations.	Use and manipulate equations related to potential difference, current, resistance, power, charge, energy transferred. Interpreting graphs.	Calculating s.h.c., density. Drawing and interpreting graphs.	How our ideas of atomic structure have developed. Use of ratios and proportional reasoning.	Calculation of speed, velocity, acceleration and distance travelled. Use and analysis of distance-time and velocity time graphs. Making estimates during calculations.