LUNESDALE LEARNING TRUST

Year 10 Physics (combined) summary curriculum map/core concepts

AUTUMN	SPRING	SUMMER	
Term 1: **Energy**	Term 2: **Electricity**	Half term 5: **Particle Model**	Half term 6: **Atomic Structure**
By the end of this term, pupils will know…..	By the end of this term, pupils will know…..	By the end of this term, pupils will know…..	By the end of this term, pupils will know…..
➢ *Different stores of energy and how energy can be moved between these* ➢ *What gravitational potential energy, kinetic energy and elastic potential energy are and how to calculate them* ➢ *How to define and calculate power in the context of energy changes and compare different examples* ➢ *How to calculate efficiency and understand what this ratio means* ➢ *HT – how to improve the efficiency of an intended energy transfer* ➢ *How thermal energy can be transferred by conduction, convection and radiation* ➢ *That materials have different specific heat capacities and how to use the equation that links SHC with energy, mass and temperature change* ➢ *Different methods for generating electricity and distinguish between renewable/non-renewable, as well as comparing these*	➢ *How to describe the flow of charge in a circuit and calculate the current flowing using Q=It* ➢ *Various symbols used to draw electrical circuits and how to draw circuit diagrams using these* ➢ *What electrical resistance is and what an Ohmic conductor is* ➢ *What potential difference is and how to use Ohm's law (V=IR)* ➢ *The differences between series and parallel circuits, with regards to how they are constructed, current, potential difference and resistance* ➢ *How to combined resistors in series* ➢ *How to solve problems with simple electrical circuits* ➢ *How to describe the resistance of a lamp, diode, thermistor and LDR, as well as how the resistance of these changes with temperature, current or light levels* ➢ *How to investigate how the resistance of a wire changes with length*	➢ *How to calculate density (recap)* ➢ *How to describe the internal energy of a substance* ➢ *How to describe and calculate the specific heat capacity of materials, as well as manipulate the equation (E=mcΘ)* ➢ *How to describe and calculate the specific latent heat of materials* ➢ *That molecules of gas are in constant, random, motion* ➢ *How the temperature of a*	➢ *The basic structure and relative sizes of constituents of the atom (recap)* ➢ *What radioactive decay is, how activity is found and count rate is detected* ➢ *The different forms of nuclear radiation (recap)* ➢ *The general nuclear equations for alpha and beta decay* ➢ *That radioactive decay is random* ➢ *What a half-life is and how to find it* ➢ *HT – how to calculate net*

methods, particularly with regards to environmental impact	➢ *Some background to the U.K. mains electricity network; that it is A.C., what the National Grid is and the basic of how this works* ➢ *The layout of a 3-pin plug and what the different parts do* ➢ *That power transfer in a circuit is related to current, resistance and potential difference and be able to use the equations that links these ($P=IV$, $P=I^2R$)* ➢ *That energy transferred by an electrical circuit is related to the flow of charge and potential difference and how to use the equation that links these ($E=QV$)* ➢ *How to describe the energy transfers in domestic appliances and use the equation that links power, energy and time ($E=Pt$)*	*gas relates to the pressure* ➢ *HT – how work done on a gas increases the temperature* ➢ *What causes pressure in a gas* ➢ *How the particle model helps explain how gas pressure, volume and temperature are linked*	*decline given half-life* ➢ *The difference between radioactive contamination and irradiation and compare hazards*
Key Tier 3 disciplinary vocabulary:	Key Tier 3 disciplinary vocabulary:	Key Tier 3 disciplinary vocabulary:	Key Tier 3 disciplinary vocabulary:
Joules Kinetic Gravitational potential Elastic potential Watts Efficiency Conduction (thermal) Convection Radiation (thermal) Specific heat capacity	Current (electrical) Charge Potential difference Resistance (electrical) Power Series Parallel Alternating current Direct current Live Neutral Fuse	Density Internal energy Specific heat capacity Specific latent heat Particle/kinetic model Pressure	Decay Activity Count rate Half-life Contamination Irradiation