Year 10 Curriculum Implementation: Science (Physics)

	Autumn	Spring	Summer
Knowledge & Skills	**Energy** • Energy stores & transfers • Energy – kinetic, elastic potential, gravitational potential • Power & energy • Specific heat capacity required practical • Efficiency of energy transfers • Conduction, convection & radiation • Improving energy efficiency • Non-renewable energy resources • Insulation required practical (SS only)	**Electricity** • Electrical circuits & components • Current, charge & potential difference • Series & parallel circuits • Resistance required practicals – of a wire, in series & parallel circuits, in bulbs, in fixed resistors and in diodes • Thermistors • LDRs • Electricity in the home • Electrical charge • National grid • Power equation • Transformers • Static electricity (SS only) • Electrical fields (SS only)	**Particles of Matter** • States of matter • Density required practicals – regular and irregular objects • Changing state • Specific latent heat • Gas pressure & Brownian motion • Gas pressure (SS only) **Radioactivity** • Developing the model of the atom • Isotopes • What is radioactivity? • Nuclear equations & graphs • Irradiation & contamination • Uses & risks of radiation (SS only) • Fission & fusion
Links to prior learning	**Year 8** Heating and thermal equilibrium: temperature difference between two objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference: use of insulators Other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels.	**Year 8** Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge, potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current, differences in resistance between conducting and insulating components (quantitative).	**Year 7 and 8** Conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving Similarities and differences, including density differences, between solids, liquids and gases.
Assessment	• assessment • formative assessment	• formative assessment • assessment • Year 10 mock exam	• formative assessment • assessment
Home learning	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions	• Educake • GCSEpod • Past paper exam questions • Reading comprehensions
Cultural Capital and extra-curricular opportunities	• Runshaw more able gifted and talented event • Science Live Manchester	• Year 9/10 trip to Geneva or Iceland	
Literacy	• Key words & definitions • Etymology of keywords	• Key words & definitions • Etymology of keywords	• Key words & definitions • Etymology of keywords
Numeracy	• Use of physics equations to calculate energy • Graphs for specific heat capacity	• Graphs of resistance for different circuit components • Calculating resistance, pd. And current in series and parallel circuits	• Calculating density • Balancing nuclear equations • Calculating half life • Interpreting half life graphs
Careers Information, Education, Advice and Guidance (CEIAG)	• Production and process engineers • Energy plant operatives	• Electronics engineers • Vehicle technicians, mechanics and electricians • Electrical engineers	• Laboratory Technician • Biological scientists and biochemists • Higher education teaching professionals • Environment professionals • Chemical scientists • Health & safety officers
Spirituality	• Awareness of importance of sustainability of resources for future generations • Our place as global citizens to minimise the impact of generating electricity	• Acknowledging that whilst we need electricity we have a duty to future generations to limit over consumption of finite resources • Promoting safe working routines with electricity that can be taken into the wider world to keep students safe	• Respect and empathy for those who gave their lives to research of nuclear resources • Understanding of how nuclear resources cab be used in medicine and compassion and empathy for those who are or have received treatment
How can parents support the curriculum?	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently	• Encourage use of Congnito Science (if purchased) • Encourage use of Educake • Provide a study area and resources • Encourage students to engage in what they have learned in class independently