Curriculum Content Map — **Subject:**

			Term 1				Term 2				Term 3		
Month			September	October	November	December	January	February	March	April	May	June	July
	Units of Work		*Topic 6 radioactivity* *Topic 8 - Energy - forces doing work*	*Topic 8 - Energy - forces doing work* *Topic 9 - Forces and their effects and Topic 15 - Forces and matter*	Topic 9 - Forces and their effects and Topic 15 - Forces and matter Topic 10 - Electricity and circuits	Topic 10 - Electricity and circuits	*Topic 10 - Electricity and circuits*	*Topic 12 - Magnetism and the motor effect and Topic 13 - Electromagnetism induction I*	Revision Biology Revision Chemistry Revision Physics	Revision Biology Revision Chemistry Revision Physics	*Revision Biology* *Revision Chemistry* *Revision Physics*	*Revision Biology* *Revision Chemistry* *Revision Physics*	Revision Biology Revision Chemistry Revision Physics
Cultural Transmission	National Curriculum area – KS3		PT6- magnetism and electromagnetism P79 PT8- Forces and motion P78	*PT8- Forces and motion P78* *PT9- forces and motion P78 Forces P78*	PT9- forces and motion P78 Forces P78 PT10- Electricity P78	PT12/13- magnetism and electromagnetism P79	PT12/13- magnetism and electromagnetism P79	*PT14- States of matter P79*					
	Substantive Knowledge	***The What!***	Know the structure of the atom • Radioactive decay and nuclear equations • Use graphical analysis to interpret decay curves • Know the difference between fission and fusion	• The difference between scalars and vectors followed resultant forces and their connection to acceleration • Newton's three laws of motion, inertia mass and equations of motion undergoing uniform acceleration and conservation of momentum • The concept of momentum and detailed conservation of momentum - calculations • Plastic deformation of materials, using experimentation to take accurate and precise measurements. • Moment and pressure calculations.	• The difference between scalars and vectors followed resultant forces and their connection to acceleration • Newton's three laws of motion, inertia mass and equations of motion undergoing uniform acceleration and conservation of momentum • The concept of momentum and detailed conservation of momentum - calculations • Plastic deformation of materials, using experimentation to take accurate and precise measurements. • Moment and pressure calculations. Forcces and Matter: Finding innovative means to measure the density of objects – using measuring skills and the correct equipment. Know that different states of matter have different densities. • Investigate what can affect the internal energy of a material and recording observations. • Know what specific heat capacity is and know the required practical skills needed to investigate it • Investigating Latent heat and gas laws	edge • Knowing the difference between p.d. and current, using new formula to make predictions • I-V graphs for an ohmic conductor, lamp, and diode • The structure of the plug and its purpose • What electric fields look like and the reason why charge flows • AC/DC, the National Grid and the function of transformers – applying the power loss equation • Electric Fields and uses and dangers of statics.	edge • Knowing the difference between p.d. and current, using new formula to make predictions • I-V graphs for an ohmic conductor, lamp, and diode • The structure of the plug and its purpose • What electric fields look like and the reason why charge flows • AC/DC, the National Grid and the function of transformers – applying the power loss equation • Electric Fields and uses and dangers of statics.	Electricity and magnetism are linked – use of Flemings Left hand and Right-hand rules to explain motors and generators • The difference between scalars and vectors followed resultant forces and their connection to acceleration • Newton's three laws of motion, inertia mass and equations of motion undergoing uniform acceleration and conservation of momentum • The concept of momentum and detailed conservation of momentum - calculations • Plastic deformation of materials, using experimentation to take accurate and precise measurements. • Moment and pressure calculations.					
	Disciplinary knowledge	***The How!***	Students will describe the changes in the nucleus which occur during alpha, beta, and gamma decay along with neutron emission in terms of atomic (proton) number and mass number using the appropriate nuclear notation for isotopes. The properties of alpha, beta, and gamma radiation have been demonstrated leading to a discussion of their use in thickness monitoring and then the safety measures required when using radioactive materials. Students will then move on to discuss the concepts of activity, count rate, and the patterns in radioactive decay that explain half-life and the associated graphs despite the random nature of individual decays. Higher tier students will perform calculations involving the relationship between the initial activity, current activity, and half-life.	Students have analysed the motion of objects in depth starting from a recap of the concept of speed and this relationship to distance travelled and time taken. The representation of motion using distance-time graphs representing single and multiple objects has been analysed to give detailed descriptions of the movement of the objects. The students have defined acceleration in terms of changes in velocity before analysing it graphically and mathematically. Higher tier students have also outlined circular motion in terms of constant acceleration but with constant speed. All students have then investigated acceleration caused by an unbalanced force on ramp, linking acceleration to the gradient of a line on a velocity-time graph.	The students will then describe electric circuits and the components used to construct them using the concept of current as the rate of charge flow through components due to a potential difference between points in the circuit. Resistance was introduced and the cause of a heating effect and corresponding energy transfer. Students will investigate the factors affecting the resistance of a wire and the corresponding current-potential difference graphs. Further investigations of the components and analysis of the current-potential difference graphs will show ohmic and non-ohmic behaviours for wires, filaments, and diodes. The relationship between the resistance of a thermistor and its temperature along with the relationship between the resistance of a light-dependent resistor and light level have been investigated.	Students will investigate the factors affecting the resistance of a wire and the corresponding current-potential difference graphs. Further investigations of the components and analysis of the current-potential difference graphs will show ohmic and non-ohmic behaviours for wires, filaments, and diodes. The relationship between the resistance of a thermistor and its temperature along with the relationship between the resistance of a light-dependent resistor and light level have been investigated.	Students will investigate the factors affecting the resistance of a wire and the corresponding current-potential difference graphs. Further investigations of the components and analysis of the current-potential difference graphs will show ohmic and non-ohmic behaviours for wires, filaments, and diodes. The relationship between the resistance of a thermistor and its temperature along with the relationship between the resistance of a light-dependent resistor and light level have been investigated.	The magnetic effect of a wire and thus a solenoid leading into the action of electromagnets allows students to be able to calculate the force on a conductor. This means electric motors and loudspeakers can be further understood. The generator effect and the link between electricity and magnetism gives rise to using the generator effect and ultimately learning about how the transformer operates.					
	Sequencing (Fkw)	***Retrieval & Extension***	5.3 Elements 5.4 Periodic table	KS3: 1.1 Speed 1.2 Gravity 1.3 Contact forces 3.4 Energy transfer 1.1 speed 1.2 gravity 1.3 gravity forces	KS3: 3.4 Energy transfer 1.1 speed 1.2 gravity 1.3 gravity forces 2.1 potential difference and resistance 2.2 current	KS3: 2.1 potential difference and resistance 2.2 current	2.1 potential difference and resistance 2.2 current 2.1 Potential difference and resistance 2.2 current 2.4 Electromagnets	2.1 Potential difference and resistance 2.2 current 2.4 Electromagnets 5.1 Particle model					
	Summative Assessment						AP2- Paper 1		Mock examinations (papers 1 and 2)	GCSE Papers	GCSE Papers	GCSE Papers	GCSE Papers
Personal Empowerment	Virtue	***The opportunity to reflect, think deeply and critically about an issue.***	Friendliness and Civility	Justice & Truthfulness	Courage	Generosity	Gratitude	Good Speech	Good Temper & Humour	Self-Mastery	Self-Mastery	Compassion	Good Sense
	Link to Virtue		Students will need to demonstrate friendliness and civility as they work in groups to complete a variety of different practical. They will need to demonstrate civility as they work towards a method to ensure they are civil with each other to achieve a common goal.	Students will demonstrate truthfulness within their work as they reflect on their finding within an investigation. Students will look at the justice on each results and determine if they are reaching their full potential.	Within the lessons, students will need to have the courage to answer the questions with their learning. Students will need to demonstrate their understanding of the courage by applying their learning to their exams and independent practice within lessons.	Students will need to demonstrate generosity of as they work with groups and demonstrate their understanding of their learning. They will need to be generous with their time and comments towards each other	Student will demonstrate good speech within their lessons by demonstrating their key words within lessons and their work	As students work within group they will need to demonstrate, good temper as they work towards a practical to achieve the independent practice. Students will need to demonstrate good humour as they can work together and laugh as each other learn	Students will need to aim high for their up and coming exams. Students will need to revise in their own time and ensure they are fully prepared for their GCSES	Students will need to aim high for their up and coming exams. Students will need to revise in their own time and ensure they are fully prepared for their GCSES	Students will need to aim high for their up and coming exams. Students will need to revise in their own time and ensure they are fully prepared for their GCSES	Students will need to aim high for their up and coming exams. Students will need to revise in their own time and ensure they are fully prepared for their GCSES	Students will need to aim high for their up and coming exams. Students will need to revise in their own time and ensure they are fully prepared for their GCSES
Preparation for Work	Skill	***Transferable skills***	Listening	Leadership	Problem-Solving	Creativity	Staying Positive	Speaking	Staying Positive	Aiming High	Aiming High	Speaking	Teamwork
	Link to Skill		Students will need to listen to each other and be able to explain another students' opinion. Students will also need to be listen to the teacher to pull out consistency underlying themes or use of previous skills.	Students will lead their learning to ensure they are secure in building on previous knowledge.	Students will need to use their problem-solving skills to be able to draw conclusions from data.	Students will need to be creative in creating their circuits. Students will be drawing conclusions in experiments and creating word and balanced symbol equations for chemical reactions	Students will need to stay positive as they learn new key words and definitions. Building on their previous knowledge	Students will need to demonstrate good speaking when working with others and demonstrate what knowledge they understand and what they need help with in prepare.					
Preparation for Citizenship	SMSC & British Values	*Developing opinions on current issues*											
	Link to SMSC & British Values												