Topic	Sub Topic	Lesson Title	Content	SMSC	Alleyne's Skills for Life
Electricity		Circuit Symbols and Series Circuits	To draw and interpret circuit diagrams To draw simple series circuits Understand the rules and calculate voltage, current and resistance Explain qualitatively why adding resistors in series increases the total resistance	Literacy - comparison task	Literacy
		Parallel Circuits	Describe the difference between series and parallel circuits Understand the rules and calculate voltage and current Explain qualitatively why adding resistors in parallel decreases the total resistance	Literacy - comparison task	Literacy
	Scientific Literacy Task	Scientific Literacy Task	Scientific Literacy Task	Scientific Literacy Task	
		Charge, Current and PD	Define charge Recall and apply the equation charge = current x time	Numeracy - calculating charge	Numeracy
		Ohm's Law	Define Ohm's Law Draw a graph to show Ohm's Law Recall and apply the equation voltage = current x resistance	Numeracy - Graph drawing Calculating voltage	Numeracy
		Required practical activity 2	Investigate the factors affecting the resistance in wire at a constant temperature	Literacy and numeracy - method comprehension and results analysis	Leadership; Problem Solving; Teamwork
		Required practical activity 2	Investigate the factors affecting the resistance in combinations of resistors in series and parallel	Literacy and numeracy - method comprehension and results analysis	Leadership; Problem Solving; Teamwork
		Peer assessed task			
		Thermistors	Describe the relationship between the resistance of a thermistor and temperature Draw a current - resistance graph	Numeracy - graph drawing	Numeracy
		LDRs	Describe the relationship between the resistance of a LDR and light Draw a current - resistance graph	Numeracy - graph drawing	Numeracy
		Required practical activity 3 (3 lessons as full practical write ups)	Use circuit diagrams to construct appropriate circuits to investigate the I–V characteristics of a variety of circuit elements, including a filament lamp, a diode and a resistor at constant temperature.	Literacy - following a method	Leadership; Problem Solving; Teamwork; Resilience
		Test			
		AC/DC	To explain the difference between direct and alternating potential difference. To calculate frequency from oscilloscope trace	SMSC - safety in the home	Literacy; Empathy
		Plugs	Identify wires in a plug Describe the role of each wire Explain why the live wire is dangerous and why the live and earth should never be connected	SMSC - safety in the home	Literacy; Empathy

		Power	To explain how the power transfer in any circuit device is related to the potential difference across it and the current through it, and to the energy changes over time Use the equations power = potential difference × current power = current^2 × resistance	Numeracy - calculating power	Numeracy
		Peer assessed task			
		Power and Energy	Describe energy transfers in circuits Describe how different domestic appliances transfer energy from batteries or ac mains Use the equations: energy transferred = power × time energy transferred = charge flow × potential difference	Numeracy - calculating energy	Numeracy
		National Grid (Transformer equation triple only)	Describe the National Grid Describe the job of step-up and step-down transformers Explain why the National Grid is efficient **TRIPLE ONLY: Transformer equation** **Explain how the effect of an alternating current in one coil in inducing a current in another is used in transformers** **Relate equation ratio to the advantages of power transmission at high potential differences.**	SMSC - National grid and energy efficency	Empathy
		Energy resources	Describe how electricity is generated Describe fossil fuels and how they generate electricity. Describe issues with the use of fossil fuels Describe the advantages and disadvantages of renewable energy resources		Empathy
		Test - combined only			
Magnets		Magnets and Fields	Describe the attraction and repulsion between unlike and like poles for permanent magnets Descibe the difference between permanent and induced magnets Describe how to plot the magnetic field pattern of a magnet using a compass Draw the magnetic field pattern of a bar magnet showing how strength and direction change from one point to another Explain how the behaviour of a magnetic compass is related to evidence that the core of the Earth must be magnetic	SMSC - Earth navigation	Empathy; Communication
		Scientific Literacy Task	Scientific Literacy Task	Scientific Literacy Task	Literacy

		Electromagnets (Triple: Uses of electromagnets)	Describe how the magnetic effect of a current can be demonstrated Draw the magnetic field pattern for a straight wire carrying a current and for a solenoid (showing the direction of the field) Explain how a solenoid arrangement can increase the magnetic effect of the current. **TRIPLE ONLY: Interpret diagrams of electromagnetic devices in order to explain how they work.**	SMSC - electromagnets in real life	Empathy; Communication
		Peer assessed task			
		Fleming's Left Hand	Describe the motor effect Use Fleming's Left Hand rule Recall factors that affect the size of a current		Literacy
		Motor Effect	To explain how the force on a conductor in a magnetic field causes the rotation of the coil in an electric motor. Use the equation force = magnetic flux density × current × length	Numeracy - calculate force	Numeracy
	23	Test			
Waves		Transverse and longitudinal waves	Describe the difference between longitudinal and transverse waves describe evidence that, for both ripples on a water surface and sound waves in air, it is the wave and not the water or air itself that travels Superposition and interference	SMSC- Earthquakes and waves	Communication
		Properties of Waves	Describe wave motion in terms of their amplitude, wavelength, frequency and period Use the equations: wave speed = frequency × wavelength peiod = 1 / frequency **TRIPLE ONLY: show how changes in velocity, frequency and wavelength, in transmission of sound waves from one medium to another, are inter-related.**	Numeracy- Calculating properties of waves	Numeracy
		Required practical 7	make observations to identify the suitability of apparatus to measure the frequency, wavelength and speed of waves in a ripple tank and waves in a solid and take appropriate measurements		Leaderhip; Problem Solving; Teamwork
		Peer assessed task			
		EM Waves	State the spectrum with the frequency and wavelength Give examples that illustrate the transfer of energy by electromagnetic waves.	SMSC- Waves in modern day society	Creativity; Empathy
		Ionising Radiation and dose	Describe the effect of UV, X-ray and gamma on body tissue Describe radiation dose Draw conclusions from given data about the risks and consequences of exposure to radiation. (HT) Explain how to produce radiowaves from AC	SMSC- Medical uses of EM waves	Empathy

		Required practical 8	IR absorption		
		Refraction	Construct ray diagrams to illustrate the refraction of a wave at the boundary between two different media. to use wave front diagrams to (HT) Explain refraction in terms of the change of speed that happens when a wave travels from one medium to a different medium.	SMSC- Refraction and perceptions of objects	Numeracy
		Suggested practical	Reflection		
		Reflection	Construct ray diagrams to illustrate the reflection of a wave at a surface. Describe the effects of reflection, transmission and absorption of waves at material interfaces	Literacy - following a method	Numeracy
		Suggested practical	Refraction		
	Scientific Literacy Task	Scientific Literacy Task	Scientific Literacy Task	Scientific Literacy Task	Literacy
		Revision			
		Waves 1 Test			
		Feedback			Independence