Science - Physics

MAGHULL HIGH SCHOOL – CURRICULUM MAP

	Lessons Sequence					
TOPIC (S) **ENERGY**	1. Energy Stores 2. Energy Changes and transfers 3. Kinetic energy 4. Gravitational Energy		5. Power 6. Energy transfers in a system ***7. Insulation (Required Practical)*** 8. Efficiency		9. Specific Heat Capacity 10. Specific Heat Capacity (Required Prac) 11. Non-renewable energy resources 12. Renewable energy resources	
Knowledge & Skills development	• Knowledge of the types of energy and examples of each • Description of the energy changes in various situations • Recall, using and rearrange equations for kinetic energy, gravitational energy, elastic energy, power, specific heat capacity and efficiency • Understanding of the meaning of the words power and efficiency in scientific contexts			• Understanding of thermal conductivity and the best use of materials in different situations • Understanding of the specific heat capacity of different materials • Experimental determination of the specific heat capacity of a block of metal • Evaluation of different methods of generating electricity		
Assessment / Feedback Opportunities	Targeted questioning throughout topic	Teacher assessment of practical skills during investigation - verbal	Knowledge Recall Quizzes	Deep marking of written task in students books	Topic Test	Targeted exam – teacher or self-assessed
Cultural Capital	• Possible visit by "Tomorrow's Engineers Energy Quest" funded by Shell or Power Plant Workers though STEM Ambassadors program					
SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	• Discussions/tasks considering all stakeholders views on new methods to generate electricity (e.g. why residents might be against solar farms but the local council may be for it) • Listening to others during presentations • Working in groups during practicals or research tasks					
Reading opportunities	• News articles – current energy issues (e.g. residents against new wind farm) • Recommended Read: All About Physics (Richard Hammond) • Recommended Read: Storm in a Teacup: The Physics of Everyday Life (Helen Czerski)					
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest Energy, Joule, Kinetic Energy, Elastic Energy, System, Thermal, Conductivity, Capacity, Specific Heat Capacity, Efficiency, Power, Watt, Conservation, Gravitational Energy, Chemical Energy, Geothermal, Hydroelectric, Biomass, Renewable, Resource, Advantage, Disadvantage					
Digital Literacy	SharePoint resources including topic quizzes, Possible use of computers to research energy resources Possible use of excel to plot graphs and analyse data, powerpoint, word, etc to present information, internet for research					
Cross-Curricular Links	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators Engineering – Properties of materials					
Careers	Careers within energy companies such as EON, careers within engineering and manufacturing, product design (e.g. sports equipment needed to transfer energy)					