| Year 8: Curriculum Map : Physics | | | |
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| | **Autumn** | **Spring** | **Summer** |
| **Assessment Objectives** | **AO1** - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%)<br>**AO2** - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%)<br>**AO3** - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%) | | |
| **Unit Length** | **Topic:** P4 Energy 2 – 15 lessons | **Topic:** P5 Electricity 2 – 15 lessons. | **Topic:** P6 Waves 1 – 14 lessons |
| **Key Learning Outcomes** | 1) Energy recap<br>2) What are the different energy resources?<br>3) What are the pros and cons of the different energy resources?<br>4) How many blades on a wind turbine are the most efficient?<br>5) How can we test our hypothesis from point 4?<br>6) Interpret our results from point 5.<br>7) How can we interpret pie chart results into an extended writing answer?<br>8) Progress assessment<br>9) Reteach and DIRT<br>10) What is power?<br>11) What is the equation for power?<br>12) How can we test the power of an appliance?<br>13) Revision<br>14) End of Unit assessment.<br>15) Reteach and DIRT. | 1) What is static electricity?<br>2) How is electricity generated?<br>3) Who helped to domesticate electricity?<br>4) What is the national grid?<br>5) Progress assessment<br>6) Reteach and DIRT<br>7) What is electrical resistance?<br>8) How is electrical resistance affected in an electrical circuit?<br>9) How can we test how resistance is affected in electrical circuits?<br>10) How can we increase the resistance of a wire?<br>11) How can we stay safe around electrical equipment?<br>12) How do we wire plugs?<br>13) Revision<br>14) End of Unit assessment<br>15) Reteach and DIRT. | 1) What are the types of waves and their characteristics?<br>2) What are light waves?<br>3) How do eyes help us to see?<br>4) How does visible light show different colours in filters and objects?<br>5) What is the darkest material ever made?<br>6) Progress assessment<br>7) Reteach and DIRT<br>8) What are sound waves?<br>9) How does amplitude and frequency change the loudness and pitch of a sound?<br>10) How do ears help us to hear?<br>11) How do transverse waves travel through space, and how does thermal energy transfer without a medium?<br>12) Revision<br>13) End of Unit assessment<br>14) Reteach and DIRT |
| **Prior knowledge** | **<u>Year 7 (taken from the year 7 physics curriculum map)</u>**<br>1) What are the different energy stores? | **<u>Year 7 (taken from the year 7 physics curriculum map)</u>**<br>1) What if the difference between conductors and insulators? | **<u>Light</u>**<br>**Year 6**<br>Demonstrates an understanding that light is a spectrum of colours.<br>Is able to describe that light travels in a straight line. |

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| | 2) How is energy transferred from one store to the other?<br>3) How do we convert the joule into kilojoules e.t.c?<br>4) How much energy is found in our food?<br>5) How can we plan a healthy diet which contains the right amount of nutrients and calories?<br>6) What are the impacts of having too much energy in the food we eat?<br>7) What is the difference between useful and wasted energy?<br>8) How can energy be transferred via conduction?<br>9) How can energy be transferred via convection?<br><br>**KS2**<br>1/2/3b) Processes that involve energy transfer: change motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels<br>3/4) Comparing the starting with the final conditions of a system and describing increases and decreases in the amount of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in in chemical compositions.<br>Using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes | 2) What are electrical circuits, and what is the difference between series and parallel circuits?<br>3) What is current, and how does it behave differently in series and parallel circuits?<br>4) What is potential difference?<br>5) How does potential difference behave differently in series and parallel circuits?<br>6) What are magnets?<br>7) How can we plot magnetic field lines?<br>8) How can we create an electromagnet?<br>9) How can we change the strength of electromagnets?<br>10) How can test electromagnets and their strength?<br><br>**KS2**<br>1/2/3b) Processes that involve energy transfer: change motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels<br>3/4) Comparing the starting with the final conditions of a system and describing increases and decreases in the amount of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in in chemical compositions.<br>Using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes | Is able describe the route of light from its source to the eye.<br>Has the ability to use the idea of light travelling in straight lines to explain the shape of shadows.<br><br>**Year 3**<br>Demonstrates an understanding that we need light to see things and that dark is the absence of light.<br>Is able to describe how light is reflected from surfaces.<br>Demonstrates an understanding that the sun is a natural light source and can be dangerous to look at.<br>Is able to describe how a shadow is formed when light is blocked.<br>Is beginning to demonstrate an understanding of why the size of a shadow changes.<br><br>**Sound**<br>Demonstrates an understanding that sounds are caused by vibrations.<br>Understands that sounds can travel through different medium.<br>Is beginning to understand that volume is caused by the strength of vibrations.<br>Demonstrates an understanding that pitch and volume can be changed.<br>Understands that sound gets fainter the further away from its source. |
| **CEIAG** | Renewable energy research<br>Electrician | Electrician<br>Engineer | Engineer<br>Light engineer |

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| **Specific careers links** | PAT tester<br>Engineer | | Sound technician<br>Musician |
| **RRSA** | Article 14: Freedom of thought, belief and religion<br>Article 24: Health and the Health services<br>Article 28: Right to education<br>Article 29: Goals of education<br>Article 27: Adequate standard of living | Article 14: Freedom of thought, belief and religion<br>Article 24: Health and the Health services<br>Article 28: Right to education<br>Article 29: Goals of education<br>Article 27: Adequate standard of living | Article 14: Freedom of thought, belief and religion<br>Article 28: Right to education<br>Article 29: Goals of education<br>Article 27: Adequate standard of living |
| **Cross curricular links** | Maths – speed distance time graphs<br>Designing turbines - technology | Numeracy- Maths<br>Safe wiring - technology | Numeracy – Maths<br>Lighting – Drama<br>Loudness and pitch - music |
| **Useful websites/ videos** | https://www.bbc.co.uk/bitesize/topics/zc3g87h/articles/zdycr2p - Continuation of energy, looking at energy resources and generating electricity.<br><br>https://classroom.thenational.academy/units/energy-0b08 - oak academy energy lessons | https://www.bbc.co.uk/bitesize/topics/zc3g87h - introduction to energy<br><br>https://classroom.thenational.academy/units/electricity-and-magnetism-ab64 - oak academy electricity lessons | https://www.bbc.co.uk/bitesize/topics/zgy39j6 - introduction to electricity?<br><br>https://classroom.thenational.academy/units/light-and-space-fa61 - oak academy light lessons<br><br>https://classroom.thenational.academy/units/sound-waves-0e79 - oak academy sound lessons |
| **Wider Reading** | **Reading**:<br><br>https://www.energy-uk.org.uk/energy-industry/renewable-generation.html#:~:text=Renewables%20produce%20more%20than%2020,strategy%20to%20reduce%20carbon%20emissions. – renewable energy in the UK | https://www.exchangeutility.co.uk/news/ever-wondered-how-much-electricity-is-generated-by-lightning/ - how much energy is in a lightning strike | https://www.smithsonianmag.com/science-nature/heres-what-the-black-hole-in-the-center-of-the-milky-way-looks-like-180980078/ - black hole at the centre of our galaxy, and how far away it is in light years |

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| **Literacy Programme** | • Decode it NOW<br>• Guided practice/model answers<br>• Sentence Starters<br>• Writing strategies | • Decode it NOW<br>• Guided practice/model answers<br>• Sentence Starters<br>• Writing strategies | • Decode it NOW<br>• Guided practice/model answers<br>• Sentence Starters<br>• Writing strategies |
| **Independent Learning Tasks** | Mind-map revision homework<br>Retrieval practice homework<br>Knowledge Organiser practice Questions.<br>Selective reading activity.<br>Points grid ILT. | Mind-map revision homework<br>Retrieval practice homework<br>Knowledge Organiser practice Questions.<br>Selective reading activity.<br>Points grid ILT. | Mind-map revision homework<br>Retrieval practice homework<br>Knowledge Organiser practice Questions.<br>Selective reading activity.<br>Points grid ILT. |