

Year 10 Curriculum Map : Physics

Assessment Objectives	<p>AO1 - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%)</p> <p>AO2 - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%)</p> <p>AO3 - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%)</p>
Unit Length	<p>Topic: – Energy 3 - 14 lessons. (Autumn term)</p>
Key Learning Outcomes	<ol style="list-style-type: none"> 1. Energy stores and pathways. 2. Energy transfers and efficiency. 3. Kinetic energy. 4. Gravitational potential energy. 5. Olympus Mons, multiple equation. 6. Power and work. 7. Progress assessment. 8. Reteach and DIRT. 9. Elastic potential energy. 10. Conduction, convection, and radiation. 11. Reducing thermal energy transfers in the home. 12. Energy resources. 13. End of Unit Assessment. 14. Reteach and DIRT.
Prior knowledge	<p>Year 7: Energy 1 Energy types and transfers. Efficiency. Conduction and convection.</p> <p>Year 8: Energy 2 Radiation. Energy resources. Work and power.</p> <p>Y9: Link back activities in all units.</p>
CEIAG Specific careers links	<p>Research and development. Energy specialist. Materials scientist.</p>

	Resource procurement. Wind turbine generator.
RRSA	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services Article 28: Right to education Article 29: Goals of education Article 27: Adequate standard of living
Cross curricular links	DT – Properties of materials Maths –Using and rearranging multiple equations, unit conversions, percentages. Geography – Energy resources. Chemistry – Particle model of matter.
Useful websites/videos	https://www.youtube.com/playlist?list=PL9louNCPbCxWNjJvmqwZ4vKy4VfcAhsCj – Free science lessons. https://classroom.thenational.academy/units/energy-c750 - Oak national academy.
Wider Reading	Olympus mons. Reliance on fossil fuels. Car suspension. Kinetic energy of a collision.
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies
Independent Learning Tasks	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice questions Selective reading activity Seneca quiz ILT

Unit Length	Topic: P2 – Electricity 3 – 15/16 lessons (Autumn/Spring term)
Key Learning Outcomes	<ol style="list-style-type: none"> 1. Charge and current. 2. Current in circuits. 3. Potential difference in circuits. 4. VIR 5. Resistance in a wire. 6. Progress assessment. 7. Reteach and DIRT. 8. Non-ohmic conductors. 9. VI graphs. 10. Plugs and fuses. 11. ACDC. 12. Electrical power. 13. Mains electricity. 14. Static electricity – Triple lesson only 15. End of unit assessment. 16. Reteach and DIRT
Prior knowledge	<p>Year 7: Electricity and magnetism 1 Current and voltage in series and parallel circuits. Conductors and insulators.</p> <p>Year 8: Electricity and magnetism 2 Static electricity. Generating electricity. The national grid. Resistance. Plugs and fuses. Electrical safety</p> <p>Y7 Chemistry – Model of the atom.</p> <p>Year 9: Link back activities in all units.</p>
CEIAG Specific careers links	<p>Electrician. PowerStation manager. National grid worker. Engineer. Materials scientist. Powerline technician.</p>

	Health and Safety Officer.
RRSA	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services Article 28: Right to education Article 29: Goals of education Article 27: Adequate standard of living
Cross curricular links	DT – Properties of materials, polymers Maths – equations and units, rearranging square equations. Geography – Impact of electricity generation.
Useful websites/videos	https://www.youtube.com/watch?v=CEBfn4ndQWI&list=PL9louNCPbCxXc2NQoIZN7-3jIKN7vW-Sq – Free science lessons. https://classroom.thenational.academy/units/electricity-f083 - Oak National Academy https://www.britsafe.org/training-and-learning/find-the-right-course-for-you/informational-resources/how-to-become-a-health-and-safety-officer-british-safety-council/#:~:text=A%20Health%20and%20Safety%20Officer%20(HSO)%20is%20responsible%20for%20minimising,existing%20health%20and%20safety%20policies – Health and safety officer.
Wider Reading	Tesla and Edison, AC v DC
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies
Independent Learning Tasks	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice questions Selective reading activity Seneca quiz ILT

Unit Length	Topic: P3 – Particle model – 11 lessons (Spring/summer term)
Key Learning Outcomes	<ol style="list-style-type: none"> 1. States of matter. 2. Density. 3. Density of regular and irregular objects. 4. Changes of state 5. Specific Heat Capacity. 6. Specific Heat Capacity required practical.

	<p>7. Specific Latent Heat.</p> <p>8. Heating and cooling curves.</p> <p>9. Pressure in gases (pressure constant in triple)</p> <p>10. EOU assessment</p> <p>11. Reteach and DIRT</p>
Prior knowledge	<p>Year 7 – Particles</p> <p>Particle model.</p> <p>States of matter.</p> <p>Changes of state.</p> <p>Brownian motion.</p> <p>Gas pressure.</p> <p>Year 8 – Link back activities in all units.</p> <p>Y9 – Atoms, elements, and compounds.</p> <p>States of matter</p> <p>Properties of substances</p> <p>The effect of bonding on melting and boiling points.</p>
CEIAG Specific careers links	<p>Materials specialist.</p> <p>Research and development of pressurised materials.</p> <p>Aeronautical engineer.</p>
RRSA	<p>Article 14: Freedom of thought, belief and religion</p> <p>Article 24: Health and the Health services</p> <p>Article 28: Right to education</p> <p>Article 29: Goals of education</p> <p>Article 27: Adequate standard of living</p>
Cross curricular links	<p>Maths -Graph drawing and design, constant equations.</p> <p>Chemistry– Particle model at KS3 and KS4</p>
Useful websites/videos	<p>https://www.youtube.com/watch?v=-EZmXVOSa20&list=PL9IouNCPbCxWdHszkb6n6503ommOpg_t7 – Free science lessons.</p> <p>https://classroom.thenational.academy/units/particle-model-of-matter-a6d5 - Oak National Academy</p>
Wider reading	<p>Leiden frost effect.</p> <p>Vanguard submarine design</p>
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters <p>Writing strategies</p>

Independent Learning Tasks	Mind-map revision homework Retrieval practice homework Knowledge Organiser practice questions Selective reading activity Seneca quiz ILT
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Unit Length	Topic: P4 – Atomic structure and radiation – 12 lessons. (Summer term)
Key Learning Outcomes	<ol style="list-style-type: none"> 1. Atomic structure. 2. Discovery of the atom. 3. Radiation. 4. Types of radiation. 5. Nuclear equations. 6. Half-life. 7. Chernobyl case study. 8. Uses and dangers of radiation. 9. Background radiation. 10. Nuclear fission and fusion. 11. EOU assessment. 12. Reteach and DIRT.
Prior knowledge	Year 7 – Particles Particle model. States of matter. Year 8 – Link back activities in all units. Y9 – Atoms, elements, and compounds. States of matter
CEIAG Specific careers links	Nuclear physicist. Radiographer. Environment agency worker. Major incident response team. Paper miller. Water main engineer.
RRSA	Article 14: Freedom of thought, belief and religion Article 24: Health and the Health services

	<p>Article 28: Right to education</p> <p>Article 29: Goals of education</p> <p>Article 27: Adequate standard of living</p>
Cross curricular links	<p>Maths – Concentration calculations, moles calculations, use of units, percentage atom economy.</p> <p>Physics – link to conservation of energy, particle model of matter, changes of state.</p>
Useful websites/videos	<p>https://www.youtube.com/watch?v=dftg9xGXcf8&list=PL9IouNCPbCxXTU7zSX4IvJDLrtCEmqEMU – Free science lessons.</p> <p>https://classroom.thenational.academy/units/atomic-structure-d811 Oak National Academy.</p>
Wider Reading	<p>Chernobyl disaster</p> <p>3 Mile Island disaster</p> <p>Rolls Royce mini nuclear reactor</p>
Literacy Programme	<ul style="list-style-type: none"> • Decode it NOW • Guided practice/model answers • Sentence Starters • Writing strategies
Independent Learning Tasks	<p>Mind-map revision homework</p> <p>Retrieval practice homework</p> <p>Knowledge Organiser practice questions</p> <p>Selective reading activity</p> <p>Seneca quiz ILT</p>