|  |
| --- |
| **Year 10 Curriculum Map : Physics** |
| **Assessment Objectives** | **AO1** - Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures (40%)**AO2** - Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. (40%)**AO3** - Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures. (20%) |
| **Unit Length** | **Topic:** – Energy 3 - 14 lessons.(Autumn term) |
| **Key Learning Outcomes** | 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** | **Year 7: Energy 1**Energy types and transfers.Efficiency.Conduction and convection.**Year 8: Energy 2**Radiation. Energy resources.Work and power.**Y9: Link back activities in all units.** |
| **CEIAG** **Specific careers links** | Research and development.Energy specialist.Materials scientist.Resource procurement. Wind turbine generator. |
| **RRSA** | Article 14: Freedom of thought, belief and religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living |
| **Cross curricular links** | DT – Properties of materialsMaths –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=PL9IouNCPbCxWNjJvmqwZ4vKy4VfcAhsCj> – 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** | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 |
| **Independent Learning Tasks** | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice questionsSelective reading activitySeneca quiz ILT |

|  |  |
| --- | --- |
| **Unit Length** | **Topic:** P2 – Electricity 3 – 15/16 lessons(Autumn/Spring term) |
| **Key Learning Outcomes** | 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** | **Year 7: Electricity and magnetism 1** Current and voltage in series and parallel circuits.Conductors and insulators.**Year 8: Electricity and magnetism 2** Static electricity. Generating electricity. The national grid. Resistance. Plugs and fuses. Electrical safetyY7 Chemistry – Model of the atom.**Year 9: Link back activities in all units.** |
| **CEIAG** **Specific careers links** | Electrician.PowerStation manager.National grid worker.Engineer.Materials scientist.Powerline technician. Health and Safety Officer. |
| **RRSA** | Article 14: Freedom of thought, belief and religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living |
| **Cross curricular links** | DT – Properties of materials, polymersMaths – equations and units, rearranging square equations. Geography – Impact of electricity generation. |
| **Useful websites/videos** | <https://www.youtube.com/watch?v=CEBfn4ndQWI&list=PL9IouNCPbCxXc2NQoIZN7-3jIKN7vW-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** | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 |
| **Independent Learning Tasks** | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice questionsSelective reading activitySeneca quiz ILT |

|  |  |
| --- | --- |
| **Unit Length** | **Topic:** P3 – Particle model – 11 lessons(Spring/summer term) |
| **Key Learning Outcomes** | 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.
7. Specific Latent Heat.
8. Heating and cooling curves.
9. Pressure in gases (pressure constant in triple)
10. EOU assessment
11. Reteach and DIRT
 |
| **Prior knowledge** | **Year 7 – Particles** Particle model.States of matter.Changes of state.Brownian motion.Gas pressure.**Year 8 – Link back activities in all units.****Y9 – Atoms, elements, and compounds**.States of matter Properties of substancesThe effect of bonding on melting and boiling points.  |
| **CEIAG** **Specific careers links** | Materials specialist. Research and development of pressurised materials.Aeronautical engineer. |
| **RRSA** | Article 14: Freedom of thought, belief and religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living |
| **Cross curricular links** | Maths -Graph drawing and design, constant equations.Chemistry– Particle model at KS3 and KS4 |
| **Useful websites/videos** | <https://www.youtube.com/watch?v=-EZmXVOSa20&list=PL9IouNCPbCxWdHszkb6n6503ommOpg_t7> – Free science lessons.<https://classroom.thenational.academy/units/particle-model-of-matter-a6d5> - Oak National Academy |
| **Wider reading**  | Leiden frost effect.Vanguard submarine design |
| **Literacy Programme** | * Decode it NOW
* Guided practice/model answers
* Sentence Starters

Writing strategies  |
| **Independent Learning Tasks** | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice questionsSelective reading activitySeneca quiz ILT |

|  |  |
| --- | --- |
| **Unit Length** | **Topic:** P4 – Atomic structure and radiation – 12 lessons.(Summer term) |
| **Key Learning Outcomes** | 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 religionArticle 24: Health and the Health servicesArticle 28: Right to educationArticle 29: Goals of educationArticle 27: Adequate standard of living |
| **Cross curricular links** | Maths – Concentration calculations, moles calculations, use of units, percentage atom economy.Physics – link to conservation of energy, particle model of matter, changes of state. |
| **Useful websites/videos** | <https://www.youtube.com/watch?v=dftq9xGXcf8&list=PL9IouNCPbCxXTU7zSX4IvJDLrtCEmqEMU> – Free science lessons.<https://classroom.thenational.academy/units/atomic-structure-d811> Oak National Academy.  |
| **Wider Reading** | Chernobyl disaster3 Mile Island disasterRolls Royce mini nuclear reactor |
| **Literacy Programme** | * Decode it NOW
* Guided practice/model answers
* Sentence Starters
* Writing strategies
 |
| **Independent Learning Tasks** | Mind-map revision homeworkRetrieval practice homework Knowledge Organiser practice questionsSelective reading activitySeneca quiz ILT |