



BRENTWOOD COUNTY HIGH SIXTH FORM

CURRICULUM OVERVIEW

PHYSICS A-LEVEL



Osborne

Co-operative Academy Trust

KS5 Curriculum Overview

Topic	Year 12	Year 13
<i>Practical Skills in Physics</i>		
<i>Foundations in Physics</i>		
<i>Forces and Motion</i>		
Electrons, waves and photons		
Newtonian World and Astrophysics		
Particles and Medical Physics		

Year 12

- Assessment Lessons are **Red**
- Reflection Lessons are **Purple**

Autumn 1 Term 1a	Autumn 2 Term 1b	Spring 1 Term 2a	Spring 2 Term 2b	Summer 1 Term 3a	Summer 2 Term 3b
<p><u>Teacher 1 – Foundations of Physics and Electricity</u></p> <ol style="list-style-type: none"> Physical quantities and errors Uncertainties and graphical treatment of uncertainties Electric current, charge and drift velocity Potential difference and e.m.f and electron gun. Access Exam Feedback Resistance of Circuit components and PAG 3.2 <p>Teacher 2 – Foundations of Physics and Forces and Motion</p> <ol style="list-style-type: none"> Resolving scalars and vectors Kinematics and graphs of motion SUVAT and Projectile motion Measurement of g and PAG 1.1 Access Exam Feedback Car stopping distances 	<p><u>Teacher 1 – Electrons, Waves and Photons</u></p> <ol style="list-style-type: none"> Resistivity (PAG 3.1) Power and Energy Kirchhoff's Laws relating to series and parallel circuits Potential Dividers and Internal resistance (PAG 4.1) Circuit Analysis End Unit Assessment Feedback <p>Teacher 2 – Forces and Motion</p> <ol style="list-style-type: none"> Force and free body diagrams. Drag, terminal velocity and equilibrium Turning forces and centre of mass Resolving forces and density Pressure and Archimedes Principle End of Unit Assessment and Feedback 	<p>Teacher 1 – Electrons, Waves and Photons</p> <ol style="list-style-type: none"> Wave Motion and Terminology (PAG 5.3) Properties of waves and electromagnetic waves Polarisation and refraction Exam Week Feedback Refractive Index and Total Internal Refraction <p>Teacher 2 – Forces and Motion</p> <ol style="list-style-type: none"> Work done and conservation of energy Kinetic and gravitational potential energy Power and efficiency Exam Week Feedback Springs and Hooke's Law 	<p>Teacher 1 – Electrons, Waves and Photons</p> <ol style="list-style-type: none"> Interference and Double Slit Diffraction grating and PAG 5.1 Stationary Waves and Harmonics Stationary Waves in columns End of Unit Assessment Feedback <p>Teacher 2 – Forces and Motion</p> <ol style="list-style-type: none"> Deforming Materials and categorisation Youngs Modulus and PAG 2 End of Unit Assessment Feedback Newton's Laws of Motion Momentum and Impulse Elastic and Inelastic collisions 	<p>Teacher 1 – Electrons, Waves and Photons</p> <ol style="list-style-type: none"> The photon and electron-volt The photoelectric effect Wave-particle duality PAG 6.1 Revision and Exam practice. <p>Teacher 2 – Particles and medical physics</p> <ol style="list-style-type: none"> Capacitors in Series and parallel Energy stored in a capacitor and discharging capacitors Charging a capacitor and graphical methods PAG 9 Exam skills and revision 	<p><u>Teacher 1 – Electrons, Waves and Photons</u></p> <ol style="list-style-type: none"> Revision and Exam Practice Revision of Content Revision of content Whole School Exam Week Feedback PAG 11 and specific heat capacity Solids, liquids and gases and internal energy. <p>Teacher 2 – Forces and Motion</p> <ol style="list-style-type: none"> Revision of Content Revision of Content Revision of Content Whole School Exam Week Feedback Electric fields and Coulombs law Uniform electric fields and electric potential energy.

Year 13

- Assessment Lessons are **Red**
- Reflection Lessons are **Purple**

Autumn 1 Term 1a	Autumn 2 Term 1b	Spring 1 Term 2a	Spring 2 Term 2b	Summer 1 Term 3a	Summer 2 Term 3b
<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Brownian Motion and Specific latent heat 2. Amount of substance and kinetic theory of gases 3. Ideal gas equation and gas laws. 4. Boltzmann constant and PAG 8. 5. Position of Equilibrium 6. End of Unit Assessment and Feedback 7. Angular velocity and centripetal acceleration <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 1. Magnetic fields and magnetic flux density 2. Charged particles in electric and magnetic fields and electromagnetic induction 3. Faraday’s Law and Lenz’s law 4. A.C generator and Transformers 	<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Centripetal forces 2. Exam Week 3. Exam Week 4. Feedback 5. Analysing simple harmonic motion and PAG 10 6. Graphs and energy of simple harmonic motion <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 1. Antiparticles, hadrons, leptons and quarks 2. Exam Week 3. Exam Week 4. Feedback 5. Beta decay and radioactivity 6. Nuclear decay and half life. 	<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Damping and Resonance 2. Gravitational Fields and Newton’s Laws of Gravitation 3. Gravitational field strength and Kepler’s Laws 4. Gravitational Potential and Gravitational potential energy 5. Structure of the Universe and Lifecycle of a star 6. Hertzsprung Russell Diagrams and Energy levels in atoms. <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 1. Modelling decay and radioactive dating – PAG 8 2. Mass Energy Equation and Binding Energy 3. Fusion and Fission 4. X-rays and attenuation of x-rays 	<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Analysing starlight and stellar luminosity 2. Astronomical Distances and the Doppler Effect 3. Hubble’s Law and the Big Bang Theory 4. Evolution of the Universe and Dark Matter and Energy 5. Revision of Content 6. End of Unit Assessment Feedback <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 7. Acoustic Impedance and Doppler Imaging 8. Revision of Content 9. Revision of Content 10. Revision of Content 11. End of Unit Assessment 12. Feedback 	<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Revision 2. Revision 3. Revision 4. Revision 5. Modelling Physics Exam <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 1. Revision 2. Revision 3. Revision 4. Revision 5. Modelling Physics Exam 	<p><u>Teacher 1 – Newtonian World and Astrophysics</u></p> <ol style="list-style-type: none"> 1. Exploring Physics 2. Unified Physics <p>Teacher 2 – Particles and Medical Physics</p> <ol style="list-style-type: none"> 1. Exploring Physics 2. Unified Physics

5. End of Units Assessment and Feedback 6. Alpha scattering and the nucleus		5. CAT Scans and the gamma camera 6. PET Scans and Ultrasound			
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Intent, Implementation and Impact KS5

INTENT	IMPLEMENTATION	IMPACT
<ul style="list-style-type: none"> Promote independence of learning into students so that they are equip to deal with Independent Learning Sessions and wider reading and work outside of the classroom Understand specific and complex chemical terminology in relation to the context of the topic Develop practical skills to aid understanding of the chemistry specification Develop key mathematical skills such as plotting and interpreting suitable graphs from experimental results to help analyse data Develop an interest and enthusiasm for chemistry. Constantly revisit topics through starters and ILS lessons to help retention. Prepare students for A Level exam. Continue the regime of constant testing and reflection 	<ul style="list-style-type: none"> Assessment embedded in lesson through interleaved practice of topics in low stakes testing, through exam questions which are self, peer to teacher assessed as well as end of unit assessments Reflective learning at the heart of assessment, with all assessments being reflected on with purple progress sheets to help students close the gap at each assessment point and progress during the course Promotion of ILS with structured work to encourage independent learning and to revise past content. Regular practical work throughout Year 12 and 13 to incorporate all skills required for the practical component. Where possible separate teachers for either side of the physics course Practical Skills covered by both teachers. 	<ul style="list-style-type: none"> Interleaved practice of knowledge helps boost retention of information over the linear course Improved A Level results s Improved exam skills through assessment and reflective learning Understanding of Physics in the wider world and its uses for career and life in general Ability to boost popularity of Physics as an option for University courses Constant revisiting of content to improve with retention.