CURRICULUM PLAN

TRIPLE SCIENCE PHYSICS (EDEXCEL 9-1)

BRAMHALL HIGH SCHOOL

Curriculum Intent

It is our intention as Science Department to provide all children, regardless of their prior learning, background, or special needs, with a broad and balanced science curriculum. We aim to promote positive attitudes to science as an interesting and enjoyable subject. To develop pupils` awareness of how science impacts on their everyday life.

Pupils are encouraged to develop their practical skills, to work collaboratively and to query and evaluate scientific evidence.

We aim to cultivate an environment conducive to learning. We encourage and value our pupils' opinions, ideas, and contributions. Similarly, we expect pupils to strive for excellence and respect the contributions of other adults and their peers. Our intention is for pupils to enjoy their learning, to be resilient, make progress and achieve at an appropriate level.

Academic Year: 2025-2026

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YEAR 10

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	**CP2 Forces and motion** - Resultant forces - Investigating acceleration - Mass and weight - Newton's Laws - Momentum - Collisions - Stopping distances - Car safety **SP3 Conservation of energy** - Energy efficiency - Keeping warm - kinetic energy - Potential energy	Forces Energy Scientific thinking Experimental skills Analysis and Evaluation Measurement Units Energy Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR – Core practical Acceleration SP2 – End of unit test CPR - Sankey Diagram CPR - GPE-KE SP3 End of unit test	New air track to be used and can extend to elastic and inelastic collisions. Can also do more than two objects colliding Consider systems which aren't 100% efficient in calculations Stress link GPE/KE and 6 markers Energy presentations	**Tier 1:** mass, force, Newton, weight **Tier 2:**, interact, collision, inertia **Tier 3:** resultant, acceleration, momentum, conservation **Tier 1:** Elastic, nuclear energy, system. efficiency **Tier 2:** Dissipated, efficiency, lubrication, thermal energy, **Tier 3:** gravitational potential energy, kinetic energy, conservation

Term 1b	- Renewable resources - Non-renewable resources - Energy trends & issues **SP4 Waves** - Types of waves - Wave properties - Wave speed equations - Wave speed practicals - Waves at boundaries	Energy Wave Motion Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Wave comparison SP4 End of unit test	Modelling and pHET for wave core practical Earth structure and p and s wave diagrams	**Tier 1:** Echo, ray, lens, ultrasound, sonar **Tier 2:** Frequency, **Tier 3:** Wavelength, wave speed, refraction, absorption, total internal reflection
Term 2a	- Reflection - Refraction - Sound and hearing - Infra and ultrasound - Seismic waves & Earth **SP5 Light and the Electromagnetic spectrum** - Lenses - Ray Diagrams - Dispersion - Colour - EM spectrum - EM properties and uses - Dangers of EM Spectrum - Radiation & temperature - Climate change	Wave Motion Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Lens Ray diagram CPR - EM Dangers SP5 End of unit test	Look at power of lenses More lens diagrams to consider object position Designing heat exp.	**Tier 1:** real, magnification **Tier 2:** virtual. **Tier 3:** focal point, converging, diverging, focal length, lens power.

Term 2b	**SP6 Radioactivity** - History of the atom - Atomic structure - Nucleus structure - P, E, N for atoms - Electron orbits - Radiation and decay - Background radiation - Half-life - Contamination - Irradiation	Atomic Structure Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	Year 10 Exams	Modelling radioactivity Flame tests and energy Carbon 14 dating	**Tier 2:** Gamma, alpha, beta, electron, proton, **Tier 3:** Radioactive decay, activity, background, Becquerel (Bq), positron, nucleus, ionisation, penetration, absorption
Term 3a	**SP6 Radioactivity** - Using radioactivity - Dangers of radioactivity - Fission and Fusion - Radiation in medicine **SP7 Astronomy** - The Solar System - Helio-centrism - Geo-centrism - Gravity and Orbits - Life cycle of stars	Atomic Structure Scientific thinking Experimental skills Analysis and Evaluation Measurement Units Space Physics Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR – Nuclear Radiation CPR - Fusion SP6 End of unit test	Comparing disasters Litvinenko Start to link to stars Consider Risks Link to chem	**Tier 1:** energy, temperature, pressure **Tier 2:** Nuclear reactor, fission, Main sequence **Tier 3:** contamination, irradiation, fusion, daughter nuclei, chain reaction, uranium, control rod, moderator,

Term 3b	**SP7 Astronomy** - Redshift - CMBR - Origins of the Universe **SP8 Energy – Forces doing work** - Power and work **SP9 Forces and their effects** - Force vector diagrams - Contact forces - Non-contact forces	Space Physics Scientific thinking Experimental skills Analysis and Evaluation Measurement Forces Energy Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Red Shift & CMBR SP7 End of unit test CPR - Work and Power	Fred model of fuses Wire wool fuses Calculating distances in space. History of space Doppler effect	**Tier 1:** Solar system, sun, star, planet, comet, galaxy, universe, satellite, moon, asteroid, black hole, **Tier 3:** Nebula, proton-star, white dwarf, red giant, supernova, neutron star, light year, resultant

YEAR 11

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	**SP9 Forces and their effects** - Rotational forces **SP10 Electricity & circuits** - Circuit symbols - Series and parallel rules - Energy & charge - Current/Potential Difference - Resistance rules	Forces Energy Units Electricity Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR – Moments SP8/9 End of unit test	A level Qs Weight, stairs & chair drag Enrichment – Tues revision Welding and heating effects	**Tier 1:** Electrons, voltage, circuit, volt, emitting, diode **Tier 2:** Series, parallel. moment **Tier 3:** Current, potential difference (p.d.), voltmeter, ampere, coulomb,

	- Special resistors - Power and Energy - Heating effect of currents - Calculations				thermistor, perpendicular, equilibrium
Term 1b	**SP10 Electricity & circuits** - a.c and d.c - Fuses and the plug - Domestic electricity - Electrical Safety **SP11 Static Electricity** - Charges & electrostatics - Dangers of electrostatics - Electric Fields - Use of electrostatics	Electricity Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Statics SP10/11 End of unit test Year 11 Mock exams	Enrichment – Tuesday revision Van de Graaff pHET fields	**Tier 1:** earth, live, neutral, fuse, field **Tier 2:** neutral, negative, positive, induce, electrostatic **Tier 3** Residual, induction, precipitator
Term 2a	**SP12 Magnetism and the motor effect** - Magnets and fields - Electromagnetism - Magnetic forces - Motors - Loudspeakers **SP13 Electromagnetic Induction** - EM induction	Forces Magnetism & electromagnetism Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Transformers SP12/13 End of unit test	Enrichment – Tuesday revision How the Earth's magnetic field works Strength of electromagnets practical and modelling evaluating methods	**Tier 1:** poles, field, compass **Tier 2:** attraction, repulsion. **Tier 3:** permanent, magnetic, flux, solenoid, Fleming, transformer, primary coil, secondary coil,

	- Microphone - Generators - Transformers - Transformer equation - National Grid & safety				induced voltage, induced current.
Term 2b	**SP14 Particle Model** - Particle model - Density - Changing state - Specific heat capacity - Specific latent heat - Energy Calcs - Gas temps and pressures - Gas pressures & volume - Absolute zero - Kelvin scale	Structure of matter Forces Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR – Core practical density CPR – core practical changes of state	Extend to different liquids and gas A Level SHC Q SHC metals and liquids	**Tier 1:** Particle, atom, molecule, state, melt, freeze, boil, volume. **Tier 2:** Density, evaporate, condense, state. **Tier 2:** Sublimation, vaporisation, hydraulics, specific heat capacity, specific latent heat.

Term 3a	**SP15 Force and matter** - Bending and stretching - Hooke's Law - Elastic limit - Work done on springs - Pressure - Pressure in fluids - Hydraulics - Pressure and upthrust	Structure of matter Forces Scientific thinking Experimental skills Analysis and Evaluation Measurement Units	CPR - Core Practical Springs SP14/15 End of unit test	Extend to different liquids and gas Stretching other materials Link to hydraulics and force multipliers	**Tier 1:** Force, weight, length, energy, spring, pressure, force, area, density, depth, weight, volume, float, sink, **Tier 2:** Extension, constant, upthrust. **Tier 3:** Newton, Pascal, Hooke, elastic limit, plastic deformation.
Term 3b	**Revision**				