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Kirk Hallam Community Academy Science Learning Overview

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	HT1	HT2	HT3	HT4	HT5	HT6
Year 7	**What is Science?** *How science works* *Skills development* **Space** *The history of space* *Motion of the Earth in space* *Space exploration*	**Cells** *What does it mean to be alive?* *Cell organelles functions* *Microscopy* **Particles** *Solids, liquids and gases* *Purity*	**Forces** *Momentum* *What is a force* *Friction*	**Reproduction** *Human life cycle* *What are STI's* *Reproduction in other animals and plants* **Sustainability** **Project work**	**Sound and light** *Production and transmission of sound* *Light rays and reflection* **Elements and compounds** *Atomic Structure* *Atoms, elements, compounds and mixtures*	**Health and Disease** *Physical and mental health* *Lifestyles and health* *Preventing the spread of infectious diseases* **Electricity** *Circuit symbols* *Series circuits* *Current and charge*
Year 8	**Cells to organs to organ systems** *Respiratory system* *Digestive system* *Circulatory system* **Energy** *Renewable and non-renewable resources*	**Energy** *Energy stores and transfers* **Solubility and separating mixtures** *Separating methods* *Rate of solubility* *Changes to solubility*	**Variation and Classification** *Variation within species* *Evidence of variation* *Classification of different species* **Heating and cooling** *Temperature* *Thermal Conduction and convection*	**Chemical change** *Chemical reaction* *Word and symbol equations* *Conservation of mass* *Exothermic and endothermic reaction* **Magnetism** ***Magnetic fields***	**How we see** *The eye* *Refraction* *Seeing in colour* **Bioenergetics** *Photosynthesis* *Respiration*	**Moving by force** *Speed* *Motion graphs* *Changing motion* **Sustainability project**
Year 9	**Acids and Alkali's** *Understanding acids and alkalis* *The Ph scale and Neutralisation* *Making Salts* **Inheritance and the Genome** *Heredity and genetic information* *The structure of the Gnome*	**The hidden effects of forces** *Mass and weight* *The hidden forces* *Turning effects*	**Earth's resources** *Rocks* *Making fossil fuels* **Interdependence of organisms** *Food chains* *Food webs* *Ecosystems*	**Electric Circuits** *Parallel circuits* *Resistance* *Electromagnetism* **Adaptation and Evolution** ***Adaptations*** ***Explaining evolution***	**Air Quality and the water cycle** *Composition of air* *Pollution* *Water cycle*	**Waves** Transverse and longitudinal wave models **Infectious diseases** Pathogens

Kirk Hallam Community Academy Biology Learning Overview

	HT1	HT2	HT3	HT4	HT5	HT6
Year 10	**Cells** *Cell Structure* *Cell Division* *Transport in cells*	**Organisation** *The digestive system* *The action of enzymes* *The circulatory system*	**Organisation** *Non-communicable diseases including the effects of lifestyle* *Plant tissue* *Plant organ systems*	**Infection and Response** *Pathogens* *Communicable diseases* *The immune system* *Use and development of drugs*	**Bioenergetics** *Photosynthesis* *Respiration*	**Recall, Review and Revise (RRR)** *Mock*
Year 11	**Homeostasis and Response** *Homeostasis* *The human nervous system* *Hormones*	**Inheritance, variation and evolution** *Meiosis* *Genetics*	**Inheritance, variation and evolution** *Variation* *Evolution*	**Ecology** Living and non-living factors Adaptations Ecosystems	**Recall, Review and Revise (RRR)** *Revision* *Exams*	**Recall, Review and Revise (RRR)** *Revision exams*
Year 12	**Foundations in biology:** *Cell structure* *Biological molecules* *Nucleotides and nucleic acids* *Enzymes*	**Foundations in biology:** *Biological membranes* *Cell division, diversity and organisation*	**Exchange and transport:** *Exchange surfaces* *Transport in animals* *Transport in plants*	**Biodiversity, Disease and immunity:** *Communicable disease, disease prevention and the immune system*	**Biodiversity, Disease and immunity:** *Biodiversity, classification and evolution*	*Practical skills in biology* *Excretion* **Recall, Review and Revise (RRR)** *Mock preparation*
Year 13	**Communication and Homeostasis:** *Neuronal and hormonal communication* *Animal and plant responses*	**Energy:** *Photosynthesis* *Respiration* **Genetics, evolution and ecosystems:** *Cellular control* *Patterns of inheritance*	**Genetics, evolution and ecosystems:** *Evolution* *Manipulating genomes and biotechnology*	**Genetics, evolution and ecosystems:** *Ecosystems, populations and sustainability*	**Recall, Review and Revise (RRR)** *Revision* *Exams*	**Recall, Review and Revise (RRR)** *Revision* *Exams*

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Kirk Hallam Community Academy Chemistry Learning Overview

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	HT1	HT2	HT3	HT4	HT5	HT6
Year 10	**Atomic Structure** *The Atom* *History of the Atom* *Electronic structure* *Development of the periodic table* *Groups in the periodic table*	**Bonding** *Ionic Bonding* *Metallic bonding* *Covalent bonding*	**Bonding** *Structure and bonding of carbon* *Nanoparticles* **Chemical change**s *Redox reactions* *Reactivity series*	**Chemical changes** *Reactions of acids* *Electrolysis*	**Energy changes** *Exothermic and endothermic reactions* *Energy transfers during reactions* *Cells, and batteries*	**Quantitative Chemistry** *Moles* *Calculating concentrations* *Volumes of solutions* **Recall, Review and Revise (RRR)**
Year 11	**Rates of Reaction** *Calculation* *Factors that affect the rate of reaction* *Equilibrium* *Reversable reactions* **Organic Chemistry** *Hydrocarbons* *Crude oil*	**Organic Chemistry** *Alkanes* *Cracking* **Chemical Analysis** *Pure substances* *Chromatography* *Formulations*	**Chemical Analysis** *Chromatography* *Gas tests* **Atmosphere** *Composition* *Changes over time* *Climate change*	**Using Resources** *Potable water* *Water treatment* *Life cycle assessments* **Recall, Review and Revise (RRR)** *Revise*	**Recall, Review and Revise (RRR)** *Revise* *Exam*	**Recall, Review and Revise (RRR)** ***Revise*** *Exam*
Year 12	**Foundations in Chemistry** *Atomic Structure* *Bonding* *Acids* *Amount of Substance*	**Foundations in Chemistry** *Amount of Substance* **Organic Chemistry** *Introduction to Organic Chemistry*	**Periodic Table and Energy** *Enthalpy* *Periodicity* *Redox Reactions* *Group 2* *Group 7*	**Introduction to Physical Chemistry** *Equilibrium* *Rates of Reaction*	**Core Organic Chemistry** *Haloalkanes* *Alcohols* **Analytical Chemistry** *Infrared and Mass Spectroscopy*	**Recall, Review and Revise (RRR)** ***Mock Preparation*** ***Organic Chemistry*** *Aromatics* *Carbonyls*
Year 13	**Organic Chemistry and Analytical Chemistry** *Amines* *Optical Isomerism* *Combinatorial Analysis* **Physical Chemistry** *Further Rates of Reaction* *Further Equilibrium*	**Physical Chemistry** *Acid and Buffer Calculations* *Further Redox and Enthalpy*	**Physical Chemistry** *Electrochemical Cells* ***Inorganic Chemistry*** *Transition Metals*	**Recall, Review and Revise (RRR)** *Revise*	**Recall, Review and Revise (RRR)** ***Exam***	

Kirk Hallam Community Academy — Physics Learning Overview

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		HT1	HT2	HT3	HT4	HT5	HT6
Year 10	Combined	**Energy** *Energy stores and changes in a system* *Conservation and dissipation of energy*	**Energy** ***Energy resources*** **Electricity** *Current, potential difference and resistance* *Series and parallel circuits* *Domestic uses and safety* *Energy transfers* *The national grid* *Domestic uses and safety*	**Electricity** *Domestic uses and safety* *Energy transfers* *The national grid* *Domestic uses and safety*	**Particle Model Radiation Atomic Structure** *Atoms and isotopes*	**Radiation Atomic S tructure Revision** ***Radioactive decay*** ***Nuclear radiation*** ***Half life*** ***Nuclear equations***	**Recall, Review and Revise (RRR)** *Revision* *Exams*
	Triple	**Energy** *Energy stores and changes in a system* *Conservation and dissipation of energy* *Energy resources*	**Electricity** *Current, potential difference and resistance* *Series and parallel circuits* *Domestic uses and safety* *Energy transfers* *The national grid* *Domestic uses and safety*	**Electricity** *Energy transfers* *The national grid* **Particle model** *Changes of state and the particle model* *Internal energy and energy transfers* *Particle model and pressure*	**Radiation Atomic structure** *Atoms and isotopes*	**Radiation Atomic Structure Forces** ***Radioactive decay*** ***Nuclear radiation*** ***Half life*** ***Nuclear equations***	**Recall, Review and Revise (RRR)** *Revision* *Exams*
Year 11	Combined	**Forces** *Forces and their interactions* *Work done and energy transfer* *Forces and motion*	**Waves** *Waves in air, fluids and solids* *Transverse and longitudinal waves* *Electromagnetic waves*	**Waves** *Electromagnetic waves* **Magnetism Electromagnetism** *Magnetic fields and electromagnetism*	**Magnetism Electromagnetism** *Electric Motors* *Flemming's Rule* **Revision**	**Recall, Review and Revise (RRR)** *Revision* *Exams*	**Recall, Review and Revise (RRR)** *Revision* *Exams*
	Triple	**Forces** *Forces and their interactions* *Work done and energy transfer* *Forces and motion*	**Waves** *Waves in air, fluids and solids* *Transverse and longitudinal waves* *Electromagnetic waves*	**Magnetism Electromagnetism** ***Magnetic Fields and electromagnetism*** ***Electric motors*** ***Fleming's rule*** *Electric motors*	**Space Physics** *Structure of the solar system* *The sun* *Orbital motion* *Satellites* *Red-Shift*	**Recall, Review and Revise (RRR)** *Revision* *Exams*	**Recall, Review and Revise (RRR)** *Revision* *Exams*

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Kirk Hallam Community Academy Physics Learning Overview

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	HT1	HT2	HT3	HT4	HT5	HT6
Year 12	**Particles Physics** *Standard quark-lepton model, baryons, mesons, leptons, photons, quarks, antiparticles, particle equations* **Waves & Particle nature of light** *Wave speed, Types of wave, stationary waves, interference, Refraction & Snell's law, critical angle, Refractive index, lenses, polarisation, diffraction, quantum physics (photons), photoelectric effect, atomic line spectra*	**Mechanics** *Uniform acceleration, Motion graphs, scalars and vectors, projectile motion, Newton's laws, acceleration, momentum, moments, work, energy* **Waves & Particle nature of light**	**Mechanics** **Waves & Particle nature of light / Materials** *Density, Stokes's law, viscosity, Hooke's law, Young modulus, Elastic strain energy*	**Mechanics** **Materials / Electric circuits** *Current, P.d., resistance, Power, I-V graphs, Resistivity, potential dividers, e.m.f., conductors and thermistors, LDR's*	**Further Mechanics** *Impulse, linear momentum, collisions, angular velocity, centripetal force* **Electric circuits**	**Gravitational fields** *Gravitational field strength, Newton's law of universal gravitation, Radial fields,* **Revision / Reteach**
Year 13	**Nuclear physics** *Alpha scattering, thermionic emission, cyclotrons, $E=mc^2$* **Nuclear Radiation** *Nuclear binding energy, Fission & Fusion, Ionising radiation, Nuclear decay* **Electric Fields** *Electric field strength, electric potential, radial fields, capacitance, capacitor discharge*	**Thermodynamics** *Specific heat capacity, latent heat, internal energy, absolute zero, Kinetic theory model, Ideal gases, Black body radiators, Stefan-Boltzmann law, Wein's law* **Magnetic fields** *Magnetic flux density, Fleming's LH rule, Lenz's law, Faraday's law*	**Space** *Luminosity, Trigonometric parallax, standard candles, Hertzprung-Russell diagram, Doppler effect, Red shift, Age of the Universe* **Oscillations** *SHM calculations, Oscillation graphs, Resonance, Free & forced oscillations, Damping*	**Exam preparation**	**Exam preparation / Exams**	**Exams**