Curriculum Overview for Science KS3

The table below details the skills and knowledge students will be covering each half term in Year 7 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Safety in the laboratory:** *equipment, measuring skills, assessing risks.* **Materials-substances and properties:** *Composites, material properties, polymers* **Particles- particles and structure:** *States of matter, the particle model, evaporation, melting and boiling points, diffusion, brownian motion* **Cells- the cellular basis of life:** *Plant and animal cells, structures in cells, specialised cells, diffusion in cells*	**Energy and energy stores:** *Energy stores, conservation of energy, conduction, convection and radiation* **Body systems**: *skeleton function, joints and muscles breathing, organisation in animals* Assessment prep	**Separation techniques:** *Pure substances and mixtures, solutions, Filtration, decanting, immiscibility, distillation, chromatography* **Forces and motion:** *Squashing and stretching, measuring forces, friction, streamlining, balanced and unbalanced forces*	Science week activities **Atoms and Elements:** *The periodic table, atoms, elements, compounds, metals and non metals, chemical formulae* **Sound:** Waves, sound and energy transfer, echoes, ultrasound	**Reproduction - in plants and animals:** *Plant reproduction, plant structure, fertilisation in plants and life cycles, puberty and adolescence, human reproductive system and cycle, menstrual cycle, fetus development* Assessment prep/Repair and rebuild	**Energy 2- Power and energy resources:** *Power and energy, energy in the home, renewable energy resources, energy in food, non renewable energy* ***Space:*** *Gravity, the night sky, the solar system, day and night*

The table below details the skills and knowledge students will be covering each half term in Year 8 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Health and lifestyle:** Diet, exercise, alcohol, drugs. **Elements and the Periodic Table:** *The periodic table, atoms, elements, compounds, metals and non metals, chemical formulae*	**Electricity:** Circuits **Animal and plant processes:** Photosynthesis, metabolism, respiration **Chemical reactions**: *chemical formula and compounds, writing equations, oxidation, neutralisation, displacement,*	**Motion and Pressure:** *Equilibrium in force systems, stretching and Hooke's law, moments of forces* **Adaptation and inheritance:** *environmental and inherited characteristics, DNA, genes chromosomes and inheritance, hereditary diseases. DNA research.*	Science week activities **Metal and acid reactions:** Forming salts, producing gases.	**Light:** *Waves, energy transfer, light, laws of light reflection and refraction, the eye and the camera, colour* **Ecosystems:** biodiversity, food chains, food webs and interdependence	**Magnetism:** *Bar magnets, attraction and repulsion, magnetic fields, electromagnets, electromagnetic devices.* **Earth and Resources:** *Rocks and rock cycles. Resources from the Earth, finite resources.*

HEARTWOOD LEARNING TRUST

BARLBY HIGH SCHOOL

The table below details the skills and knowledge students will be covering each half term in Year 9 in this subject area.

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Cell biology-** *microscopy, structure and cell processes, eukaryotes and prokaryotes, cell specialisation, osmosis and diffusion, active transport. Exchange surfaces.* **Mixtures and Separation-** *pure substances, mixtures and formulations, techniques and chromatography and gas identification,*	**Conservation and dissipation of energy:** *Energy stores and transfers, power and work, GPE and KE transfers and calculations, energy dissipation, efficiency.* **Cell division- and the cell cycle:** *DNA and the genome, cell cycle and mitosis, stem cells, ethics* **Atomic Structure:** *Atoms, elements and compounds*	Assessment preparation **Atomic structure** (cont): *Atoms, elements and compounds recap, chemical equations and balancing equations, structure of the atoms, p n and e, isotopes.* **Energy by Heating/Energy resources:** *Conduction, insulators, heating the home, renewable and non- renewable resources.*	**Organisation and the digestive system:** *Principles of organisation, the digestive system, chemistry of food, enzymes, making digestion efficient,* Science week **Periodic table:** *Development of the periodic table, the modern periodic table, Group 1, Group 7, Group 0, Transition metals and their properties*	**Transport in animals- blood, the heart, breathing:** *Blood, blood vessels and transport, the heart and structure, heart disease, breathing,* **The Earth's atmosphere:** *The Atmosphere structure, global warming and acid rain, carbon footprint, pollutants* **Particle model and matter-** *density and SHC, internal energy of substances., latent heat and*	**Organisms and their environments:** *Food chains and webs, populations and community, interdependence, biodiversity, competition and adaptations.*

		recap, chemical equations and balancing equations, structure of the atoms, p n and e, isotopes.			*the particle model*	

Curriculum Overview for Science KS4

The table below details the skills and knowledge students will be covering each half term in **Year 10** in this subject area.
Awarding Organisation: AQA

	HT1	HT2	HT3	HT4	HT5	HT6
Knowledge and skills covered this year	**Communicable diseases:** Infection and response **Ions:** Formation of ions, ionic bonding **Electricity-** circuits, pd, current and resistance. **Non communicable disease and lifestyle:** Risk factors	**Chemical changes:** Neutralisation, acid reactions **Electricity in the home:** domestic electricity and safety **Plant biology**: processes in plants	**Chemical calculation:** Moles, mass calculations, products in reactions **Forces in balance:** contact and non contact forces **Respiration:** aerobic and anaerobic, exercise effects Assessment preparation	**Extraction of metals:** Reactivity series, displacement. **Radioactivity:** *Development of the atomic model, isotopes, radioactive decay and nuclear equations, half life, background radiation and exposure, contamination and irradiation*	**Covalent molecules:** Giant structures, small covalent molecules and properties. **Hydrocarbons:** Organic chemistry and fuels, alkanes and alkenes **Energy changes in reactions:** Exothermic and endothermic.	**The nervous system and hormonal control** **Fertility and Hormones** **Waves and wave behaviour** Assessment preparation and feedback.

The table below details the skills and knowledge students will be covering each half term in **Year 11** in this subject area.
Awarding Organisation: AQA

	HT1	HT2	HT3	HT4	HT5	
Knowledge and skills covered this year	**Homeostasis and response:** *The nervous system, reflexes and synapses,the endocrine system, puberty and the menstrual cycle, controlling fertility, other hormones.* **Rates of chemical change:** Rates of reaction, using graphs, reversible reactions. **Forces:** *Resultant forces and work, stretching, pressure in gases, Newtons laws,*	**Assessment prep** **Mock Exams** **Inheritance, variation and selection:** *DNA, reproduction and meiosis, genetic diagrams, variation, evolution, genetic engineering, fossils, classification* **Organic chemistry:** *Hydrocarbons Crude oil and cracking, alkenes and polymers.* **Chemical analysis:**	**Waves:** Sound, light, refraction **Ecology:** *Food chains and webs, populations and community, interdependence, biodiversity, competition and adaptations. The carbon cycle and decay, deforestation and land use.* **Magnetism:** *Permanent and induced magnets, electromagnetism electromagnetic devices.* **Chemistry of the**	**Using resources:** *Finite and renewables, recycling, life cycle assessments, Water.* ***Mock Exams Exam preparation***	**Exam preparation**	

	acceleration, motion graphs,road safety, momentum	*Purity and formulations, mixtures and chromatography, tests for gases.*	**atmosphere:** *Evolution of the atmosphere, climate change, pollution.*			