

## KS3 Curriculum Overview

The KS3 curriculum covers the National Curriculum for Science and coincides with AQA's, we have written a bespoke route and scheme of work to navigate the curriculum. Students across the key stage are taught in banded sets and the course is designed to build on the skills and knowledge from KS2 and to allow for a smooth progression to KS4. The course emphasises working scientifically and is skills based where possible. Topics are banded together to form "big ideas" which allow students to build their knowledge and skills, with each big idea being visited twice over the key stage.

Note the current Repetition of units I because the route that students take has been amended so this page will be updated year on year.

| Year & Term      | Themes / Key Questions   | Knowledge   | Skills   | Academic Language  |
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| Year 7<br>Term 1 | <b>Big idea Organisms 1</b><br>Cells<br>Movement<br><b>Big idea – Earth 1</b><br>Earth Structure<br>Universe<br><b>Big idea – Forces 1</b><br>Speed<br>Gravity                     | The components that make up the body<br>What the skeleton is and its purpose<br>How we move<br>How rocks are classified, what the rock cycle is and the processes that link the different types of rocks.<br>Objects in the solar system and how they give rise to seasons.<br>Understanding what forces are, linking them to speed and comparing the effect of gravity on objects. | Producing slides and interpreting them.<br>Rearranging formula<br>Producing different charts and graphs.<br>Linking different processes to the world we live in.<br>Describing the effect of celestial bodies on the Earth.<br>Calculating values to 2 d.ps giving scientific units. | Ligaments<br>Tendons<br>Joints<br>Nucleus<br>Mitochondria<br>Vacuole<br>Diffusion<br>Speed<br>Acceleration<br>Weight<br>Gravity<br>Weathering<br>Erosion<br>Igneous rock<br>Metamorphic<br>Sedimentary<br>Orbit<br>Global warming<br>Greenhouse effect |
| Year 7<br>Term 2 | <b>Big idea – Genes 1</b><br>Variation<br>Human reproduction<br><b>Big idea – Matter 1</b><br>Particle Model<br>Separating mixtures<br><b>Big idea – Waves 1</b><br>Light<br>Sound | That different organisms have different adaptations to their environment and how sexual reproduction occurs in humans.  | Describe the process of foetal development.<br>Plot charts describing different variations.<br>Investigate physical  | Species<br>Variation<br>Continuous<br>Discontinuous<br>Gamete<br>Fertilisation<br>Menstruation<br>Ovulation<br>Evaporate<br>Condense   |

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|                     |  | To give an explanation of what materials are like inside and explain physical separation processes. Describe how waves travel and the difference and similarities between light and sound.  | separation processes. Link models to real life examples of substances. Construct ray diagrams to represent longitudinal and transverse waves.   | Solvent<br>Solute<br>Dissolve<br>Distillation<br>Filtration<br>Chromatography<br>Longitudinal<br>Amplitude<br>Wavelength<br>Frequency<br>Echo<br>Vacuum<br>Incident ray<br>Reflected ray<br>Transparent<br>Translucent<br>Opaque<br>Convex<br>Concave |
| Year 7<br>Term<br>3 | <b>Big Idea Earth 2</b><br>Climate<br>Earth Resources<br><b>Big idea- Reactions 1</b><br>Metals and non-metals<br>Acids and alkalis  | Understand that the climate of the Earth is changing, explain how we can extract and conserve Earth's resources. Explain what the differences are between acids and alkalis, describe the characteristics and reactivity of metals. | Interpret data to explain how climate is changing. Investigate metal extraction by following a method.<br><br>Justify patterns in reactivity and the use of indicators based on primary data. | Natural resources<br>Ore<br>Extraction<br>Recycling<br>Electrolysis<br>Displacement<br>Oxidation<br>Reactivity<br>pH<br>indicator<br>Base<br>Concentration  |
| Year 8<br>Term<br>1 | <b>Big Idea – Ecosystems 1</b><br>Interdependence<br>Plant Reproduction<br><b>Big idea – Energy 1</b><br>Energy Costs<br>Energy Transfer<br><b>Big idea – Waves 2</b><br>Wave Effects<br>Wave Properties | Describe how organisms interact with each other within an ecosystem. Explore the way that plants reproduce. Explain how electricity is generated now and how it   | Explain how predators and prey numbers changes over time. Model the ways that plants can spread their seeds. Investigate different energy sources.  | Food web<br>Population<br>Producer<br>Consumer<br>Pollen<br>Ovules<br>Pollination<br>Carpel<br><br>Dissipates<br>Gravitational potential energy<br>Elastic energy   |

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|                  |  | might be in the future.<br>Describe the energy transfer in waves.  | Investigate the effects of energy on objects.  | Kinetic energy<br>Ultrasound<br>Microphone<br>Loudspeaker<br>Waves<br>Transverse wave   |
| Year 8<br>Term 2 | <b>Big idea – Organisms 2</b><br>Breathing<br>Digestion<br><b>Big Idea Energy 2</b><br>Work<br>Heating and Cooling<br><b>Big idea – Matter 2</b><br>Periodic Table<br>Elements | Describe how the body exchanges gases and how drugs can affect the body. Describe how food is digested.<br>Describe how energy can be transferred and how to prevent energy loss in the home.                          | Model gas exchange<br>Analyse different fad diets and their possible benefits or risks.<br>Compare the energy needed to move different object and investigate how to reduce the force needed.<br>Analyse different types of insulation and relate to cost/benefit. | Work<br>Lever<br>Displacement<br>Deformation<br><br>Breathing<br>Trachea<br>Bronchi<br>Bronchioles<br>Alveoli<br>Enzymes<br>Carbohydrate<br>Protein<br>Lipid<br>Physical<br>Chemical<br>Group<br>Period<br>Element<br>Atom<br>Molecule<br>Compound<br>Power<br>Renewable<br>Non-renewable<br>Fossil fuels |
| Year 8<br>Term 3 | <b>Big idea – Ecosystems 2</b><br>Respiration<br>Photosynthesis<br><b>Big idea – Electromagnets 1</b><br>Voltage and resistance<br>Current                                     | Explain how the body transfers energy from food via respiration, describe the differences between aerobic and anaerobic respiration. Explain how plants make their food via photosynthesis. Describe how current flows | Analyse the rates of respiration and photosynthesis in plants.<br>Investigate the short term effects of exercise on the body.<br>Investigate the voltage and current in series and parallel circuits   | Aerobic respiration<br>Anaerobic respiration<br>Fermentation<br>Photosynthesis<br>Chlorophyll<br>Potential difference<br>Current<br>Resistance<br>Conductor<br>Insulator<br>Electrons<br>Electrostatic force<br>Field   |

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|                  |   | around a circuit, describe the differences and similarities between series and parallel circuits.  |   |  |
| Year 9<br>Term 1 | <b>Big Idea – Genes 2</b><br>Evolution<br>Inheritance<br><b>Big idea – Reaction 2</b><br>Chemical Energy<br>Types of Reaction<br><b>Big idea – Electromagnets 2</b><br>Electromagnets<br>Magnetism<br><b>Big Idea Earth 2*</b><br>Climate<br>Earth Resources<br>*Rotation altered to reflect feedback from students | Explain what the theory of evolution is. Describe how characteristics can be described as inherited. Explain the differences in reactions based on temperature changes. Describe how electrical circuits can interact with magnetism. Understand that the climate of the Earth is changing, explain how we can extract and conserve Earth's resources. | Use evidence to account for different characteristics and the appearance of differences within a species. Investigate reactions and describe the chemical processes. Use data to draw conclusions on reactions. Build electromagnets and explain their function and use. Explore the effect of electricity on magnetism. Interpret data to explain how climate is changing. Investigate metal extraction by following a method. | Catalyst<br>Exothermic<br>Endothermic<br>Chemical bond<br>Reactant<br>Product<br>Conserved<br>Natural selection<br>Extinct<br>Biodiversity<br>Evolution<br>Electromagnet<br>Solenoid<br>Core<br>Magnetic force<br>Permanent magnet<br>Magnetic poles<br>Equilibrium<br>Newton<br>Resultant Force<br>Friction<br>Contact force<br>Natural resources<br>Ore<br>Extraction<br>Recycling<br>Electrolysis |
| Year 9<br>term 2 | Bridging unit<br>KS4 content begins   |  |   |  |