

# Curriculum Overview 2023-24 Science

## Curriculum overview for Year 7

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p><b>Curriculum Content:</b></p> <p><b>Priority Essential knowledge</b> and skills that will be taught.</p>	<p><b>Prior learning:</b> KS2 using tables and graphs. Identifying variables and simple trends.</p>	<p><b>Prior learning:</b> KS2 MRS GREN characteristics of life. The purpose of bones and muscles.</p>	<p><b>Prior learning:</b> HT1 using tables and graphs. Identifying variables and simple trends. KS2 the importance of eating the right amounts of different foods. Function of the basic parts of the digestive system. Drawing labelled diagrams. Grouping materials into solids, liquids and gasses. Some materials change state at certain temperatures. Some materials dissolve, which is a physical change and how some mixtures can be separated</p>	<p><b>Prior learning:</b> HT1 using tables and graphs. Identifying variables and simple trends. KS2 naming carnivore, omnivore, herbivore, producer, prey, predator. An organism's suitability to the environment. Simple classification (mammal etc). Simple food chains. How environmental changes can affect survival of a species. Life cycle of flowering plants. Life cycle of humans, changes in puberty.</p>	<p><b>Prior learning:</b> KS2 how forces can change the shape of things. Contact (air/water resistance and friction) and non-contact forces (gravity and magnetism). Simple mechanisms inc levers, pulleys and gears. Magnets can attract /repel depending on the poles.</p>	<p><b>Prior learning:</b> Naming the planets in the solar system. The movement of the earth in relation to the sun and the movement of the moon in relation to the earth. The earth's rotation and day/night and the apparent movement of the sun across the sky.</p>

	<p><b>Key Knowledge:</b></p> <p><u>Introduction to Science</u></p> <ul style="list-style-type: none"> <li>• Safety rules in a science lab.</li> <li>• Hazard symbols.</li> <li>• Writing a scientific method.</li> <li>• Variables.</li> </ul>	<p><b>Key Knowledge:</b></p> <p><u>Living things</u></p> <ul style="list-style-type: none"> <li>• Structure of cells.</li> <li>• Using a microscope.</li> <li>• Skeleton, muscles, and joints.</li> <li>• Diffusion in cells.</li> </ul> <p><u>Energy</u></p> <ul style="list-style-type: none"> <li>• Types of energy.</li> <li>• Energy transfers.</li> <li>• Work done.</li> <li>• Springs and spring energy.</li> <li>• Insulation and preventing energy loss.</li> <li>• Processes that transfer heat energy.</li> </ul>	<p>(filter, sieve, evaporate).</p> <p><b>Key Knowledge:</b></p> <p><u>Digestion</u></p> <ul style="list-style-type: none"> <li>• Parts of the digestive system.</li> <li>• Enzymes and how they work.</li> <li>• Testing food for nutrients.</li> </ul> <p><u>Particles</u></p> <ul style="list-style-type: none"> <li>• Atoms, elements, compounds, and mixtures.</li> <li>• States of matter.</li> <li>• Naming compounds</li> <li>• How to separate different mixtures by different techniques. (Chromatography, distillation and filtration).</li> </ul>	<p><b>Key Knowledge:</b></p> <p><u>Acids and alkalis</u></p> <ul style="list-style-type: none"> <li>• Identifying acids and alkalis by pH.</li> <li>• Neutralisation.</li> <li>• Reactions of acids.</li> <li>• Reactivity series of metals</li> </ul> <p><u>Ecology</u></p> <ul style="list-style-type: none"> <li>• Habitats and ecosystems.</li> <li>• Adaptations of plants and animals.</li> <li>• Food chains and webs.</li> <li>• Pyramids of numbers.</li> <li>• Biodiversity and human impact on the environment.</li> </ul>	<p><b>Key Knowledge:</b></p> <p><u>Forces</u></p> <ul style="list-style-type: none"> <li>• Measuring forces.</li> <li>• Spring forces.</li> <li>• Distance-time graphs.</li> <li>• Calculating speed.</li> </ul>	<p><b>Key Knowledge:</b></p> <p><u>Space</u></p> <ul style="list-style-type: none"> <li>• Planets</li> <li>• Gravity</li> <li>• Eclipses</li> <li>• Seasons and day/night.</li> <li>• Light year.</li> </ul> <p><u>Reproduction</u></p> <ul style="list-style-type: none"> <li>• Variation.</li> <li>• Parts of the male and female reproductive systems.</li> <li>• Menstrual cycle.</li> <li>• Fertilisation.</li> <li>• Pregnancy.</li> <li>• Contraception.</li> <li>• IVF</li> <li>• Reproduction in plants.</li> </ul>
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	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Simple unit conversions.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Links:</b> GCSE required practicals.</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Making biological drawings.</li> <li>• Calculating an average.</li> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> </ul> <p><b>Future Links:</b> GCSE plant, animal and bacterial cell structure, microscopes, plant cell organisation magnification equation. Diffusion, osmosis, active transport.</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> <li>• Planning and evaluating an experiment.</li> <li>• Interpreting models.</li> </ul> <p><b>Future Links:</b> Digestion, enzymes to include lock and key and induced fit hypothesis, food tests, CHD. Atomic structure with subatomic particles. Bonding to form compounds.</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Planning and evaluating an experiment.</li> <li>• Drawing graphs and results tables.</li> <li>• Constructing Venn diagrams and bar charts.</li> <li>• Interpreting models.</li> <li>• Constructing food webs and simple pyramids of numbers</li> </ul> <p><b>Future Links:</b> Acids and bases reactions (word and symbol). The reactivity series, REDOX reactions, separating metals including electrolysis. Relationships of organisms within</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Recording information in a table.</li> <li>• Interpreting models.</li> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> <li>• Planning and evaluating an experiment.</li> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> <li>• Drawing graphs and results tables.</li> </ul> <p><b>Future Links:</b> Newton's laws, springs and extension, momentum and forces in motion.</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Interpreting models.</li> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> <li>• Planning and evaluating an experiment.</li> <li>• Using equations.</li> <li>• Reading data in tables and graphs.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> <li>• Labelling biological diagrams.</li> </ul> <p><b>Future Links:</b> Renewable energy resources, consequences of using fossil fuels. The national grid. Menstrual cycle to include hormone control, homeostasis, and nervous pathways.</p>
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		Energy stores and transfers, energy equations, energy and power, power equations, specific heat capacity, insulation in the home, efficiency equations, energy resources.	Separation techniques to include RF value in chromatography, States of matter and changing state, specific latent heat.	their habitat, adaptations, predator prey cycles, sampling techniques. Effect of humans on the ecosystem including waste management, global warming, deforestation, maintaining ecosystems.		Contraception and IVF.
<b>Assessment</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year DC1 test</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year DC2 test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.

**Curriculum overview for Year 8**

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p><b>Curriculum Content:</b></p> <p><b>Priority Essential knowledge</b> and skills that will be taught.</p>	<p><b>Prior learning:</b> Use symbols to draw circuits. Constructing a simple circuit and identify whether the light will be on based on it being a complete circuit. Associate voltage to bulb brightness/ buzzer volume. Recognise that some materials are electrical conductors (metals) or insulators.</p>	<p><b>Prior learning:</b> Using tables to record data. KS2 parts of the circulatory system. The impact of diet and exercise on the way the body works.</p>	<p><b>Prior learning:</b> Using tables to record data and stating simple trends. KS2 light is needed to see things, dark is the absence of light. Light travels in straight lines. Reflection is light bouncing off things. Opaque objects and shadows. Sound comes from vibrations. Some work on pitch and volume.</p>	<p><b>Prior learning:</b> Using tables and graphs to show data, identifying simple trends and saying how the evidence supports or refutes it. KS2 what plants need to grow and be healthy.</p>	<p><b>Prior learning:</b> KS2 How environmental changes can affect survival of a species. KS2 how fossils are formed (trapped in rock). Basic inheritance and how offspring are not identical to parents. Natural selection leading to evolution.</p>	<p><b>Prior learning:</b> KS2 How environmental changes can affect survival of a species. KS2 what plants need to grow and be healthy. Using tables to record data and stating simple trends. KS2 naming carnivore, omnivore, herbivore, producer, prey, predator. An organism's suitability to the environment. Simple classification (mammal etc). Simple food chains. How environmental changes can affect survival of a species. Life cycle of flowering plants. Life cycle of humans, changes in puberty.</p>

	<p><b>Key Knowledge:</b> <u>Disease and immunity</u></p> <ul style="list-style-type: none"> <li>•Types of contagious and non-contagious diseases and their effects on the body.</li> <li>•The body's defences against disease.</li> <li>•Vaccinations and how they work.</li> <li>•The difference between a medicine and a painkiller.</li> <li>•How new drugs are discovered.</li> </ul> <p><u>Electricity and magnets</u></p> <ul style="list-style-type: none"> <li>• Building and drawing series and parallel circuits.</li> <li>• Describing and measuring/calculating potential</li> </ul>	<p><b>Key Knowledge:</b> <u>Atmosphere</u></p> <ul style="list-style-type: none"> <li>•Changes to the atmosphere over time.</li> <li>•Global warming and climate change.</li> <li>•Carbon cycle.</li> <li>•Pollutants and acid rain.</li> </ul> <p><u>Respiration</u></p> <ul style="list-style-type: none"> <li>•Structure and adaptations of the lungs.</li> <li>•Aerobic respiration and its uses.</li> <li>•Anaerobic respiration and its uses.</li> <li>•Structure and adaptations of the heart.</li> <li>•Changes to the body during exercise.</li> </ul>	<p><b>Key Knowledge:</b> <u>Sound and Light</u></p> <ul style="list-style-type: none"> <li>•Construct and label diagrams that represent waves.</li> <li>•Label the parts of the ear.</li> <li>•Describe some uses of sound waves.</li> <li>•Label the parts of the EM spectrum.</li> <li>•Label the parts of the eye.</li> <li>•Observe and draw diagrams of reflection and refraction.</li> </ul>	<p><b>Key Knowledge:</b> <u>Exothermic and endothermic reactions</u></p> <ul style="list-style-type: none"> <li>•Conservation of mass.</li> <li>•Combustion.</li> <li>•Measuring the energy released by fuels.</li> <li>•Exothermic and endothermic reactions.</li> </ul> <p><u>Photosynthesis</u></p> <ul style="list-style-type: none"> <li>•Photosynthesis equation.</li> <li>•Measuring photosynthesis.</li> <li>•Structure and adaptations of leaves.</li> </ul>	<p><b>Key Knowledge:</b> <u>Inheritance</u></p> <ul style="list-style-type: none"> <li>•The variation between living things.</li> <li>•Natural selection.</li> <li>•How fossils are formed.</li> <li>•Benefits and risks of selective breeding.</li> <li>•Cloning plants and animals.</li> </ul>	<p><b>Key Knowledge:</b> <u>Eco project</u></p> <ul style="list-style-type: none"> <li>•Renewable energy</li> <li>•Properties of materials.</li> </ul>
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	<p>difference, current and resistance.</p> <ul style="list-style-type: none"> <li>• Drawing magnetic field lines.</li> <li>• Making electromagnets.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Labelling biological diagrams.</li> <li>• Evaluating data.</li> <li>• Reading data in tables.</li> <li>• Constructing circuit diagrams.</li> <li>• Identifying and testing a hypothesis.</li> <li>• Identifying a trend in data.</li> </ul> <p><b>Future Learning:</b> Communicable diseases spread, symptoms and prevention. Vaccination and</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Reading data in tables.</li> <li>• Identifying and testing a hypothesis.</li> <li>• Identifying a trend in data.</li> </ul> <p><b>Future Learning:</b> Aerobic and anaerobic respiration and metabolism including word and</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Using equations.</li> <li>• Recording data in a table</li> <li>• Identifying trends in data.</li> <li>• Construct diagrams to show reflection and refraction of light waves.</li> <li>• Comparing angles of incidence to reflection/refraction.</li> <li>• Constructing and labelling wave diagrams.</li> </ul> <p><b>Future Learning:</b> Constructing labelled diagrams of transverse and longitudinal waves, Using and calculating</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating an average.</li> <li>• Reading data in tables and graphs.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> <li>• Labelling biological diagrams.</li> </ul> <p><b>Future Learning:</b> Relative formula mass and conservation of mass calculations (inc moles H).</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Labelling biological diagrams</li> <li>• Drawing Punnett squares.</li> <li>• Calculating ratios and probability.</li> </ul> <p><b>Future Learning:</b> Constructing and using tables and graphs. DNA structure, reproduction,</p>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Research</li> <li>• Comparing the properties of two materials</li> <li>• Reading data in tables and graphs.</li> </ul> <p><b>Future Learning:</b> Ecological relationships, interdependence of species, adaptation and evolution.</p>
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	immunity, drug development and peer review. Symbol circuits, using the equation $V=IR$ , IV characteristics, circuit devices. $V$ I and R in series and parallel circuits. Wiring a plug and the national grid. Using tables and graphs to display information and to extract information from.	symbol equations. The short- and long-term effects of exercise. Evolution of the atmosphere, global warming, carbon footprint, air pollution.	wave speed, wavelength, frequency, period. Electromagnetic waves and their uses, dangers of EM waves.	Energy changes in reactions including bond energies. Plant cell organisation, leaf structure, photosynthesis (inc word and symbol equations) and factors affecting photosynthesis.	mitosis and meiosis, constructing punnet squares and genetic diagrams, calculating probability, inherited diseases, variation leading to evolution, selective breeding and genetic modification.	
<b>Assessment</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year DC1 test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year DC2 test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.



**Curriculum overview for Year 9**

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p><b>Curriculum Content:</b></p> <p><b>Priority Essential knowledge</b> and skills that will be taught.</p>	<p><b>Prior learning:</b> KS3 cell structure and using a microscope. Stem cells, diffusion. Elements, compounds and mixtures. Separating mixtures.</p>	<p><b>Prior learning:</b> KS3 Types of energy. Energy transfers. Work done. Springs and spring energy. Insulation and preventing energy loss. Processes that transfer heat energy. Elements, compounds and mixtures. Separating mixtures.</p>	<p><b>Prior learning:</b> KS3 Types of energy. Energy transfers. Work done. Springs and spring energy. Insulation and preventing energy loss. Processes that transfer heat energy. KS3 atoms, elements, compounds, mixtures. Grouping materials into solids, liquids and gasses. Some materials change state at certain temperatures.</p>	<p><b>Prior learning:</b> KS3 Parts of the digestive system. Enzymes and how they work. Testing food for nutrients. Heart and circulation. Lungs and breathing. The effect of exercise. Building and drawing series and parallel circuits. Describing and measuring/calculating potential difference, current and resistance. <u>GCSE</u> Types of cells, specialised cells and stem cells. Energy, types and transfers.</p>	<p><b>Prior learning:</b> KS3 Grouping materials into solids, liquids and gasses. Some materials change state at certain temperatures. Types of contagious and non-contagious diseases and their effects on the body. The body's defences against disease. Vaccinations and how they work. The difference between a medicine and a painkiller. How new drugs are discovered.</p>	<p><b>Prior learning:</b> KS3 Atoms, elements, compounds, and mixtures. Exothermic and endothermic reactions. Types of energy. Energy transfers. Processes that transfer heat energy. <u>GCSE</u> Types and energy and energy transfers. KS3 Aerobic respiration and its uses. Anaerobic respiration and its uses. Changes to the body during exercise. <u>GCSE</u> Structure and parts of cells for respiration and photosynthesis, lungs and digestive system.</p>



	<p><b>Key Knowledge:</b> <u>Cells</u></p> <ul style="list-style-type: none"> <li>• Structure and function of cells.</li> <li>• Adaptations of specialised cells.</li> <li>• How to use microscopes.</li> <li>• Calculating magnification.</li> <li>• Function and uses of stem cells.</li> <li>• Stages in cell division. (mitosis)</li> <li>• How substances move in and out of cells. (Diffusion, osmosis and active transport)</li> </ul> <p><u>Atoms and the periodic table</u></p> <ul style="list-style-type: none"> <li>• Structure of an atom.</li> <li>• History of ideas about the atom.</li> <li>• Structure of elements, compounds and mixtures.</li> <li>• Balancing symbol equations.</li> </ul>	<p><b>Key Knowledge:</b> <u>Energy</u></p> <ul style="list-style-type: none"> <li>• Types of energy.</li> <li>• Energy transfers and calculating efficiency.</li> <li>• Calculating gravitational, kinetic and elastic potential energy.</li> <li>• Calculating specific heat capacity.</li> <li>• Work done.</li> <li>• Power.</li> <li>• Springs and spring constant.</li> <li>• Conduction, convection and radiation.</li> <li>• Renewable and non-renewable energy resources.</li> </ul> <p><u>Atoms and the periodic table</u></p> <ul style="list-style-type: none"> <li>• Structure of an atom.</li> <li>• History of the atom.</li> <li>• Structure of elements,</li> </ul>	<p><b>Key Knowledge:</b> <u>Energy</u></p> <ul style="list-style-type: none"> <li>• Types of energy.</li> <li>• Energy transfers and calculating efficiency.</li> <li>• Calculating gravitational, kinetic and elastic potential energy.</li> <li>• Calculating specific heat capacity.</li> <li>• Work done.</li> <li>• Power.</li> <li>• Springs and spring constant.</li> <li>• Conduction, convection and radiation.</li> <li>• Renewable and non-renewable energy resources.</li> </ul> <p><u>Bonding</u></p> <ul style="list-style-type: none"> <li>• How atoms form ions.</li> <li>• How atoms bond by ionic, covalent and metalling bonding.</li> </ul>	<p><b>Key Knowledge:</b> <u>Organisation</u></p> <ul style="list-style-type: none"> <li>• Structure and adaptations of the digestive system.</li> <li>• Digestive enzymes and their functions.</li> <li>• Testing for different nutrients in food.</li> <li>• Structure and adaptations of the lungs.</li> <li>• Structure and adaptations of the heart, blood and blood vessels.</li> <li>• Coronary heart disease, cancer and the effect of lifestyle on health.</li> <li>• Structure and adaptations of a plant leaf and stem.</li> <li>• How water moves around a plant. (Transpiration, translocation and stomata)</li> </ul>	<p><b>Key Knowledge:</b> <u>Particle model</u></p> <ul style="list-style-type: none"> <li>• Particle arrangement in solids, liquids and gases.</li> <li>• States of matter and particle arrangement during changes of state.</li> <li>• Calculating density, specific heat capacity and specific latent heat.</li> <li>• Brownian motion and how gases and liquids cause pressure.</li> <li>• Calculating pressure.</li> </ul> <p><u>Infection and response</u></p> <ul style="list-style-type: none"> <li>• Contagious diseases.</li> <li>• Bacterial, viral and fungal diseases.</li> <li>• The bodies defence against disease.</li> </ul>	<p><b>Key Knowledge:</b> <u>Energy changes</u></p> <ul style="list-style-type: none"> <li>• Exothermic and endothermic reactions.</li> <li>• Measuring energy changes in reactions.</li> <li>• Calculating energy changes</li> </ul> <p><u>Bioenergetics</u></p> <ul style="list-style-type: none"> <li>• Aerobic respiration and its uses.</li> <li>• Anaerobic respiration and its uses.</li> <li>• Changes to the body during exercise.</li> <li>• Metabolism</li> <li>• Photosynthesis and factors affecting it.</li> <li>• Measuring photosynthesis.</li> </ul>
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	<ul style="list-style-type: none"> <li>•How to separate different mixtures by different techniques. (Chromatography, distillation and filtration).</li> <li>•Structure of the periodic table.</li> <li>•Reactions of elements in different groups in the periodic table.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Unit conversions.</li> <li>• Using equations.</li> <li>• Calculating ratios and probability.</li> <li>• Using standard form</li> <li>• Making biological drawings.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> </ul>	<p>compounds and mixtures.</p> <ul style="list-style-type: none"> <li>•Separation techniques. (Chromatography, distillation and filtration).</li> <li>•Structure of the periodic table.</li> <li>•Reactions of elements in different groups in the periodic table.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Unit conversions.</li> <li>• Using equations.</li> <li>• Calculating ratios and probability.</li> <li>• Using standard form</li> <li>• Making biological drawings.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> </ul>	<ul style="list-style-type: none"> <li>•Drawing ions and covalent electron diagrams.</li> <li>•Properties of substances bonded by different types of bonding.</li> <li>•How types of bonding lead to properties of substances.</li> <li>•States of matter and particle arrangement during changes of state.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Drawing and using models to represent atoms and sub-atomic particles.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<p><u>Electricity</u></p> <ul style="list-style-type: none"> <li>•Symbol circuits, using the equation <math>V=IR</math>,</li> <li>•IV characteristics.</li> <li>•Circuit devices.</li> <li>•V I and R in series and parallel circuits.</li> <li>•Wiring a plug and electricity in the home.</li> <li>•Power.</li> <li>•The national grid.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Recording and reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>•Painkillers and antibiotics.</li> <li>•Vaccines and vaccinations.</li> <li>•How new drugs are developed.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Drawing and using models to represent atoms and sub-atomic particles.</li> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Recording and reading data in tables and graphs.</li> <li>• Interpreting models.</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Learning:</b> Bioenergetics and the use of mitochondria in respiration. Photosynthesis in plant cells. Infection and response, types of cells in the immune system. Organisation, types of cells in the human body and structure of organs.</p>	<ul style="list-style-type: none"> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Learning:</b> Particle model of matter, specific heat capacity and specific latent heat. Energy changes, increase and decreases in energy during chemical reactions and types of energy. Electricity, how energy is transferred by electrical currents.</p>	<p><b>Future Learning:</b> Thermal energy and how energy is transferred. Conservation of energy. Bonding, structure and properties of materials. <u>A-level Physics</u> Bulk properties of materials, density and young's modulus.</p>	<p><b>Future Learning:</b> Electrolysis <u>A-level Physics</u> Further investigation of circuits, electromotive force and resistivity. Transistors and diodes. <u>A-level Biology</u> Transport of substances in organisms and mass transport.</p>	<ul style="list-style-type: none"> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> <li>• Making and labelling biological drawings.</li> <li>• Reading data in tables and graphs.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Learning:</b> Electrolysis <u>A-level Physics</u> Further investigation of circuits, electromotive force and resistivity. <u>A-level Chemistry</u> Organic synthesis and the reactions of functional groups in chemical reactions. Types of bonding and electron configuration.</p>	<ul style="list-style-type: none"> <li>• Making and labelling biological drawings.</li> </ul> <p><b>Future Learning:</b> Anaerobic respiration and its role in homeostasis. <u>A-level Chemistry</u> Mass spectrometry, NMR and analytical chromatography. Reactions of ions in solution. Electrode potentials and electrochemical cells. Energetics and enthalpy. <u>A-level Biology</u> Energy transfers in</p>
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	<p>Inheritance, specialised cells in reproduction. Bonding, how atomic structure influences atoms bonding. Organic chemistry, structure of hydrocarbons, combustion and fractional distillation. Radiation, structure of the atom leading to nuclear decay. Quantitative chemistry, use of atomic mass in chemical calculations. Chemical analysis, separation of substances for identification, Rf values. <u>A-level Physics</u> Structure of the atom, particles and anti-particles and their interactions. <u>A-level Biology</u> Eukaryotic and</p>	<p>Waves, how energy is transferred by waves. Bonding, how atomic structure influences atoms bonding. Organic chemistry, structure of hydrocarbons, combustion and fractional distillation. Radiation, structure of the atom leading to nuclear decay. Quantitative chemistry, use of atomic mass in chemical calculations. Chemical analysis, separation of substances for identification, Rf values. Chemistry of the atmosphere, renewable and non-renewable sources of energy. <u>A-level Physics</u> Structure of the</p>				<p>and between organisms. Photosynthesis, respiration and energy in ecosystems.</p>
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	<p>Prokaryotic cell structure, biological molecules. Energy transfers in and between organisms.  <u>A-level Chemistry</u>          Atomic structure, electron configuration and investigation of specific functional groups in chemistry, Periodicity, group 2 elements, transition metals, NMR and analytical chromatography.</p>	<p>atom, particles and anti-particles and their interactions. Conservation of energy, measurement of energy in thermal and simple harmonic systems, power and electricity. Calculating energy from radioactive emissions. Thermodynamics.  <u>A-level Chemistry</u>          Atomic structure and investigation of specific functional groups in chemistry, Periodicity, group 2 elements, transition metals, NMR and analytical chromatography. Thermodynamics and chemical kinetics.  <u>A-level Biology</u>          Energy transfers in and between organisms.</p>				
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<p><b>Assessment</b></p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.  <b>Whole year DC1 benchmark test.</b></p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.  <b>Whole year DC2 benchmark test.</b></p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment).          End of unit tests.</p>
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**Curriculum overview for Year 10**

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p><b>Curriculum Content:</b></p> <p><b>Priority Essential knowledge and skills that will be taught.</b></p>	<p><b>Prior learning:</b> KS3 Aerobic respiration and its uses. Anaerobic respiration and its uses. Changes to the body during exercise. KS3 Atoms, elements, compounds, and mixtures. <u>GCSE</u> Structure and parts of cells for respiration and photosynthesis, lungs and digestive system. <u>GCSE</u> Structure of the atom</p>	<p><b>Prior learning:</b> KS3 Atoms, elements, compounds, and mixtures. Combustion. Exothermic and endothermic reactions. Types of energy. Energy transfers. Processes that transfer heat energy. Types of contagious and non-contagious diseases and their effects on the body. The body's defences against disease. Vaccinations and how they work. The difference between a medicine and a painkiller. How new drugs are discovered. <u>GCSE</u> Types and energy and energy transfers.</p>	<p><b>Prior learning:</b> KS3 Construct and label diagrams that represent waves. Describe some uses of sound waves. Label the parts of the EM spectrum. Observe and draw diagrams of reflection and refraction. Combustion. Exothermic and endothermic reactions. Types of energy. Energy transfers. Processes that transfer heat energy.</p>	<p><b>Prior learning:</b> KS3 Measuring forces. Spring forces. Distance-time graphs. Calculating speed.</p>	<p><b>Prior learning:</b> KS3 Acids, alkalis and pH scale. Neutralisation and reactions of acids with metals. Reactivity series. KS3 Word and symbol equations.</p>	<p><b>Prior learning:</b> KS3 Food chains and webs. Adaptations of animals. Habitats and interdependence. GCSE Pollutants and their effect on the environment.</p>



	<p><b>Key Knowledge:</b> <u>Bioenergetics</u></p> <ul style="list-style-type: none"> <li>•Aerobic respiration and its uses.</li> <li>•Anaerobic respiration and its uses.</li> <li>•Changes to the body during exercise.</li> <li>•Metabolism</li> <li>•Photosynthesis and factors affecting it.</li> <li>•Measuring photosynthesis.</li> </ul> <p><u>Atomic structure and radiation</u></p> <ul style="list-style-type: none"> <li>•Structure of the atom.</li> <li>•Types of radiation.</li> <li>•Properties of radiation.</li> <li>•Radiation safety.</li> <li>•Changes to atoms during radioactive decay.</li> </ul>	<p>Renewable and non-renewable sources of energy.</p> <p><b>Key Knowledge:</b> <u>Infection and response</u></p> <ul style="list-style-type: none"> <li>• Contagious diseases.</li> <li>• Bacterial, viral and fungal diseases.</li> <li>• The bodies defence against disease.</li> <li>• Painkillers and antibiotics.</li> <li>• Vaccines and vaccinations.</li> <li>• How new drugs are developed.</li> </ul> <p><u>Energy changes</u></p> <ul style="list-style-type: none"> <li>• Exothermic and endothermic reactions.</li> <li>• Measuring energy changes in reactions.</li> <li>• Calculating energy changes.</li> </ul> <p><u>Using resources</u></p>	<p><b>Key Knowledge:</b> <u>Chemical analysis</u></p> <ul style="list-style-type: none"> <li>•Purity and formulations.</li> <li>•Paper chromatography and use a chromatogram to calculate RF values.</li> <li>•Tests for common gases.</li> </ul> <p><u>Waves</u></p> <ul style="list-style-type: none"> <li>• Labelled diagrams of transverse and longitudinal waves.</li> <li>• Calculating wave speed, wavelength, frequency and period.</li> <li>• Refraction and wave speed.</li> <li>• Wave front diagrams.</li> </ul>	<p><b>Key Knowledge:</b> <u>Forces</u></p> <ul style="list-style-type: none"> <li>•Scalar and vector quantities.</li> <li>•Types of forces.</li> <li>•Force diagrams and resultant forces.</li> <li>•Work done.</li> <li>•Forces acting on a spring.</li> <li>•Hooke's law.</li> <li>•Calculating speed and acceleration.</li> <li>•Speed-time and velocity-time graphs.</li> <li>•Newton's laws.</li> <li>•Momentum and inertia.</li> <li>•Thinking, braking and stopping distances.</li> </ul>	<p><b>Key Knowledge:</b> <u>Chemical changes</u></p> <ul style="list-style-type: none"> <li>• Acids and bases.</li> <li>• Strong and weak acids and bases.</li> <li>• Reactions of acids.</li> <li>• Making salts.</li> <li>• Reactivity series.</li> <li>• Separating metals from metal oxides.</li> <li>• Oxidation and reduction.</li> <li>• Electrolysis.</li> </ul>	<p><b>Key Knowledge:</b> <u>Ecology</u></p> <ul style="list-style-type: none"> <li>•Biotic and abiotic factors.</li> <li>•Adaptations.</li> <li>•Food chains.</li> <li>•Environmental sampling.</li> <li>•Water and carbon cycles.</li> <li>•Biodiversity.</li> <li>•Waste management.</li> <li>•Global warming.</li> </ul>
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	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Making and labelling biological drawings.</li> <li>• Reading data in tables and graphs.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>• Finite and renewable resources.</li> <li>• Making resources more sustainable and the importance of recycling.</li> <li>• Life cycle assessments and comparing two similar products.</li> <li>• Potable water and how sewage is processed.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Making and labelling biological drawings.</li> <li>• Using equations.</li> <li>• Making and labelling biological drawings.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> </ul>	<ul style="list-style-type: none"> <li>• Electromagnetic waves and their uses and dangers.</li> <li>• Experiments to show radiation.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> <li>• Evaluating scientific theories.</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Unit conversions.</li> <li>• Using equations.</li> <li>• Using standard form</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> </ul>	<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Recording data.</li> <li>• Calculating mean.</li> <li>• Identifying anomalous results.</li> <li>• Reading and evaluating data in tables and graphs.</li> </ul>
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	<p><b>Future Learning:</b> Anaerobic respiration and its role in homeostasis. <u>A-level Biology</u> Energy transfers in and between organisms. Photosynthesis, respiration and energy in ecosystems. <u>A-level Physics</u> Nuclear physics, radioactive decay, fission and fusion.</p>	<ul style="list-style-type: none"> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Learning:</b> <u>A-level Chemistry</u> Mass spectrometry, NMR and analytical chromatography. Reactions of ions in solution. Electrode potentials and electrochemical cells. Energetics and enthalpy. <u>A-level Biology</u> Factors affecting ecosystems and populations of organisms.</p>	<p><b>Future Learning:</b> Chemistry of the atmosphere, how hydrocarbons influence the environment and global warming/pollutants. <u>A-level Chemistry</u> investigation of specific functional groups in chemistry, alkanes, alkenes, alkynes and aromatic chemistry. <u>A-level Physics</u> Dynamics, thermodynamics, inertia and momentum.</p>	<p><b>Future Learning:</b> <u>A-level Physics</u> Dynamics, thermodynamics, inertia and momentum. Moments, newtons laws of motion, motion and projectile motion.</p>	<ul style="list-style-type: none"> <li>• Planning and evaluating an experiment.</li> </ul> <p><b>Future Learning:</b> <u>A-level Chemistry</u> Reactions of ions in solution. Electrode potentials and electrochemical cells.</p>	<p><b>Future Learning:</b> <u>A-level Biology</u> Ecological relationships, interdependence of species, adaptation and evolution.</p>
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			Moments, newtons laws of motion, motion and projectile motion.			
<b>Assessment</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark DC1 test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark DC2 test.</b>	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.	In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark DC3 test.</b>

Curriculum overview for Year 11

TERM	Autumn HT 1	Autumn HT 2	Spring HT 1	Spring HT 2	Summer HT 1	Summer HT 2
<p><b>Curriculum Content:</b></p> <p><b>Priority Essential knowledge</b> and skills that will be taught.</p>	<p><b>Prior learning:</b> KS3 Acids, alkalis and pH scale. Neutralisation and reactions of acids with metals. Reactivity series. KS3 Word and symbol equations. Building and drawing series and parallel circuits. Describing and measuring/calculating potential difference, current and resistance.</p> <p><b>Key Knowledge:</b> <u>Chemical changes</u></p> <ul style="list-style-type: none"> <li>• Acids and bases.</li> <li>• Strong and weak acids and bases.</li> <li>• Reactions of acids.</li> <li>• Making salts.</li> <li>• Reactivity series.</li> <li>• Separating metals from metal oxides.</li> </ul>	<p><b>Prior learning:</b> KS3 Atoms, elements, compounds, and mixtures. KS3 Structure of the atom. Word and symbol equations. Magnets, magnetic fields and electromagnets.</p> <p><b>Key Knowledge:</b> <u>Quantitative chemistry</u></p> <ul style="list-style-type: none"> <li>• Relative formula mass.</li> <li>• Percentage composition.</li> <li>• Calculating moles.</li> <li>• Balancing symbol equations.</li> <li>• Conservation of mass.</li> </ul>	<p><b>Prior learning:</b> KS3 Gametes, types of reproduction and inheritance of characteristics.</p> <p><b>Key Knowledge:</b> <u>Inheritance</u></p> <ul style="list-style-type: none"> <li>• Structure of DNA.</li> <li>• Types of reproduction.</li> <li>• Meiosis.</li> <li>• X &amp; Y chromosomes.</li> <li>• Genetic diagrams.</li> </ul>	<p><b>Prior learning:</b> KS3 Food chains and webs. Adaptations of animals. Habitats and interdependence. GCSE Pollutants and their effect on the environment.</p> <p><b>Key Knowledge:</b> <u>Ecology</u></p> <ul style="list-style-type: none"> <li>• Biotic and abiotic factors.</li> <li>• Adaptations.</li> <li>• Food chains.</li> <li>• Environmental sampling.</li> <li>• Water and carbon cycles.</li> <li>• Biodiversity.</li> </ul>	GCSE revision	GCSE revision and exams

	<ul style="list-style-type: none"> <li>• Oxidation and reduction.</li> <li>• Electrolysis.</li> </ul> <p><u>Electricity</u></p> <ul style="list-style-type: none"> <li>• Symbol circuits,</li> <li>• using the equation <math>V=IR</math>,</li> <li>• IV characteristics.</li> <li>• Circuit devices.</li> <li>• V I and R in series and parallel circuits.</li> <li>• Wiring a plug and electricity in the home.</li> <li>• Power.</li> <li>• The national grid.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Drawing and using models to represent atoms and sub-atomic particles.</li> <li>• Calculating averages.</li> <li>• Using equations.</li> <li>• Unit conversions.</li> <li>• Recording and reading data in</li> </ul>	<ul style="list-style-type: none"> <li>• Calculating masses from moles.</li> <li>• Calculating concentration.</li> </ul> <p><u>Magnetism</u></p> <ul style="list-style-type: none"> <li>• Permanent and induced magnets.</li> <li>• Magnetic fields.</li> <li>• Current and magnetism in wires.</li> <li>• Electric motors.</li> <li>• Fleming's left-hand rule.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Calculating averages.</li> <li>• Unit conversions.</li> <li>• Using equations.</li> <li>• Using standard form</li> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> </ul>	<ul style="list-style-type: none"> <li>• Inherited disorders.</li> <li>• Mutations and variation.</li> <li>• Evolution.</li> <li>• Selective breeding.</li> <li>• Genetic engineering.</li> <li>• Types of fossils.</li> <li>• Extinction.</li> <li>• Antibiotic resistant bacteria.</li> <li>• Classification.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Reading data in tables and graphs.</li> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>• Waste management.</li> <li>• Global warming.</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Recording data.</li> <li>• Calculating mean.</li> <li>• Identifying anomalous results.</li> <li>• Reading and evaluating data in tables and graphs.</li> </ul>		
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	<p>tables and graphs.</p> <ul style="list-style-type: none"> <li>• Interpreting models.</li> <li>• Drawing graphs and results tables.</li> <li>• Planning and evaluating an experiment.</li> </ul>	<ul style="list-style-type: none"> <li>• Planning and evaluating an experiment.</li> </ul>				
	<p><b>Future Learning:</b> <u>A-level Physics</u> Further investigation of circuits, electromotive force and resistivity. <u>A-level Chemistry</u> Reactions of ions in solution. Electrode potentials and electrochemical cells.</p>	<p><b>Future Learning:</b> <u>A-level Physics</u> Magnetic resonance imaging.</p>	<p><b>Future Learning:</b> <u>A-level Biology</u> DNA, genes, chromosomes, protein synthesis, RNA, mutations during meiosis, genetic diversity, adaptations and taxonomy.</p>	<p><b>Future Learning:</b> <u>A-level Biology</u> Ecological relationships, interdependence of species, adaptation and evolution.</p>		
<b>Assessment</b>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark test.</b></p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). End of unit tests. <b>Whole year benchmark test.</b></p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). Practice exam papers.</p>	<p>In class assessments (teacher questioning, practice Qs, self and peer assessment). GCSE exams</p>