

# Long Term Curriculum Plan

## Subject – Science

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| Lessons per week Key Stage 3: | 4 |
| Lessons per week Key Stage 4: | 4 |

|                           | Autumn Term  | Spring Term  | Summer Term  |
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| <b>Year 7</b>             | <p>Forces 1 : Contact and non-contact forces</p> <p>Cells 1: Cells and organisation</p> <p>Matter 1: Particle model of matter and model changes</p>  | <p>Reactions 1: Chemical reactions</p> <p>Energy 1: Electricity voltage and resistance</p> <p>Ecosystems 1: Interdependence</p>  | <p>Earth structure 1: Earth structure</p> <p>Waves 1: Sound and Light</p> <p>Genes 1: Variation</p>  |
| <b>Threshold concepts</b> | <p>Forces: Understanding forces helps us to predict and control physical change. Understand how forces affect motion.</p> <p>Cells: How cells work together to form tissues, organs, systems and organisms</p> <p>Matter: macroscopic and sub-microscopic, understanding of matter</p> | <p>Reactions: Chemical reactions, compounds and elements, atoms.</p> <p>Energy: Electricity and magnetism, electromagnetic waves</p> <p>Ecosystems: Organisms, ecosystem</p>   | <p>Earth Structure: The Earth's crust and atmosphere</p> <p>Waves: Energy transfer, understanding waves and the usage</p> <p>Genes: Organism classification, genome life skills and classification</p>                             |
| <b>Big Questions</b>      | <p>Forces: Where do we come across forces?</p> <p>Cell: What are living organisms made from?</p> <p>Matter: How can we explain evidence from experimentation?</p>  | <p>Reactions: Where do we use acids and alkalis? What is a chemical reaction?</p> <p>Energy: How do electrical circuits work?</p> <p>Ecosystem: How does the environment influence the animals and plants living in the habitat?</p> | <p>Earth Structure: Why are fuels useful? What is the structure of the earth made from? How is the atmosphere changed over the earth's evolution to today?</p> <p>Waves: How does light travel? How are different sounds made?</p> |

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|                             |   |   | <b>Genes: How do individuals of the same species differ from each other?</b>  |
| <b>Skills</b>               | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>- Correctly use some SI units, Present data using a bar graph, rearrange and substitute values in equations</li> <li>• <b>Communication</b>- Presenting data</li> <li>• <b>Problem Solving</b> - Ask questions based on behaviour of the world Leadership</li> <li>• <b>Collaboration</b> - Teamwork when carrying out practical's</li> <li>• <b>Metacognition</b>- Interleaving of assessments &amp; retrieval</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>- Correctly use some SI units, Present data using a bar graph, rearrange and substitute values in equations</li> <li>• <b>Communication</b>- Presenting data</li> <li>• <b>Problem Solving</b> - Ask questions based on behaviour of the world Leadership</li> <li>• <b>Collaboration</b> - Teamwork when carrying out practical's</li> <li>• <b>Metacognition</b>- Interleaving of assessments &amp; retrieval</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>- Correctly use some SI units, Present data using a bar graph, rearrange and substitute values in equations</li> <li>• <b>Communication</b>- Presenting data</li> <li>• <b>Problem Solving</b> - Ask questions based on behaviour of the world Leadership</li> <li>• <b>Collaboration</b> - Teamwork when carrying out practical's</li> <li>• <b>Metacognition</b>- Interleaving of assessments &amp; retrieval</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> |
| <b>Cultural development</b> | <a href="#">See SMSC Plan</a>   |   |   |
| <b>Summary</b>              | <b>By the end of year 7 pupil`s will have covered these fundamental units that will form their science journey:</b><br>Light, Sound, Renewable energy. Emerging technologies, Electrical circuits. How to measure current and voltage. Force and its effect on objects<br>Magnetic fields, Electromagnets and Gravity and Friction  |   |   |
| <b>Year 8</b>               | <b>Matter 2: Conservation of Mass</b><br><br><b>Cells 2: Cells around the body</b><br><br><b>Forces 2: Gravity</b>  | <b>Reactions 2: Making salts. Metals and non-metals</b><br><br><b>Energy 2: Heating and cooling. Exo &amp; Endo reactions</b><br><br><b>Genes 2: Plant and human production</b>   | <b>Earth 2: Earth`s atmosphere. The universe</b><br><br><b>Waves 2: Earth and the solar system</b><br><br><b>Health and disease 1: Lifestyle</b>  |

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| <b>Threshold concepts</b> | <p><b>Matter:</b> Atoms and chemical reactions, the law of the conservation of mass</p> <p><b>Cells:</b> How things move in and out of the body. The process of diffusion is introduced, organ systems</p> <p><b>Forces:</b> Object motion through forces. Look at speed, velocity and acceleration</p>   | <p><b>Reactions:</b> Chemical reactions, salts and the chemical industry</p> <p><b>Energy:</b> Temperature changes, convection, conduction and radiation</p> <p><b>Genes:</b> Growth and development of living things, changes during adolescence through puberty. Plants and human reproduction, human contraception and sexually transmitted infections prevention.</p>   | <p><b>Earth:</b> Evolution of life, sustainability. Human activity and impact on the world</p> <p><b>Waves:</b> Orders of magnitude, solar system</p> <p><b>Health and Disease:</b> Harmful interactions with organisms. Life choices - diet, smoking, exercise and drugs</p>   |
| <b>Big Questions</b>      | <p><b>Matter:</b> How many different materials are there?</p> <p><b>Cells :</b> What is food and why is it important? How do all cells use the food molecules absorbed after digestion?</p> <p><b>Forces:</b> How fast is it moving? What is gravity?</p>   | <p><b>Reactions:</b> Why are metals useful? How can we tell whether a liquid is a mixture</p> <p><b>Energy:</b> What is the temperature?</p> <p><b>Genes:</b> How does a new life start? How do new plants grow?</p>  | <p><b>Earth:</b> What is in our solar system?</p> <p><b>Waves:</b> What is the cause of a day, year and month?</p> <p><b>Health and Disease:</b> How does lifestyle affect health?</p>  |
| <b>Skills</b>             | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>-Conservation of mass</li> <li>• <b>Communication</b>- Listening, discussions</li> <li>• <b>Problem Solving</b>- Mutations</li> <li>• <b>Leadership</b>- Group work</li> <li>• <b>Collaboration</b>- Climate change, recycling, extraction of resources</li> <li>• <b>Metacognition</b>- Interruption activities, interleaving of assessments</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>-Conservation of mass</li> <li>• <b>Communication</b>- Listening, discussions</li> <li>• <b>Problem Solving</b>- Mutations</li> <li>• <b>Leadership</b>- Group work</li> <li>• <b>Collaboration</b>- Climate change, recycling, extraction of resources</li> <li>• <b>Metacognition</b>- Interruption activities, interleaving of assessments</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Literacy &amp; Numeracy</b>-Conservation of mass</li> <li>• <b>Communication</b>- Listening, discussions</li> <li>• <b>Problem Solving</b>- Mutations</li> <li>• <b>Leadership</b>- Group work</li> <li>• <b>Collaboration</b>- Climate change, recycling, extraction of resources</li> <li>• <b>Metacognition</b>- Interruption activities, interleaving of assessments</li> <li>• <b>Physical, Practical and Technical</b>- Conduct experiments to test predictions, Identify some hazards. make and record simple observations in a table, make predictions using scientific language and understanding</li> </ul> |

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| <b>Cultural development</b> | <a href="#">See SMSC Plan</a>   |  |   |
| <b>Summary</b>              | <p><b>By the end of year 8 pupils will be using year7 science alongside year 8 topics:</b></p> <p>Gas exchange and the human breathing system, effects of drugs, nutrition &amp; digestion, food tests. Elements, atoms, compounds, formulae, polymers, the periodic table with a focus on alkali metals, halogens and noble gases.</p>                     |  |   |
| <b>Year 9</b>               | <p><b>Matter 3: Atomic structure &amp; periodic table</b></p> <p><b>Forces 3: Mass and Density</b></p> <p><b>Genes 3: Evolution</b></p>   | <p><b>Reactions 3: Energy Changes</b></p> <p><b>Health and disease 2: Immunity and Respiration</b></p> <p><b>Energy 3: Respiration</b></p>   | <p><b>Earth 3: Atmosphere and the carbon cycle</b></p> <p><b>Eco-systems 2: Bio-diversity</b></p>   |
| <b>Threshold concepts</b>   | <p><b>Matter: Sub-atomic particles, periodic table. Key chemical and physical trends and patterns in groups of elements</b></p> <p><b>Forces: Movements, pressure and density exert forces. Mass and weight</b></p> <p><b>Genes: Darwin theory of evolution. Heredity and adaptation to explain the existence of all living organisms on our planet</b></p> | <p><b>Reactions: Chemical reactions as exothermic and endothermic. Chemical reactions in everyday life.</b></p> <p><b>Health and Disease: Health and transport systems. Animals can fight disease. Artificial immunity</b></p> <p><b>Energy: Electricity and magnetism. Electromagnets</b></p> | <p><b>Earth: Rock cycle, carbon cycle, water cycle. Nitrogen cycle and the homeostasis of the planet</b></p> <p><b>Ecosystems: Photosynthesis. Human impact on bio-diversity.</b></p> |

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| <b>Big Questions</b>        | <b>Matter: How are elements and compounds different?</b><br><br><b>Mass and density: Are mass and weight the same? How does the size of an atom affect density?</b><br><br><b>Genes: What characteristics can be inherited?</b>   |                                     | <b>Reactions: How is energy involved in doing useful things?</b><br><b>What chemical reactions take place when fuels burn?</b><br><br><b>Health and Disease: What are micro-organisms and how they grow?</b><br><b>How is gas exchanged in respiration?</b><br><br><b>Energy: How do we use magnets?</b><br><b>How can you make an electromagnet stronger?</b> |   | <b>Earth: How are rocks transformed during the rock cycle?</b><br><b>How has human involvement changed our atmosphere?</b><br><br><b>Eco systems: How are animals classified? Where does our food come from?</b>   |   |
| <b>Skills</b>               | <b>Literacy &amp; Numeracy</b> - Budgeting, graph, monthly cycles<br><b>Communication</b> - Debates – designer baby<br><b>Problem Solving</b> - Vaccination -programmes<br><b>Collaboration</b> -Modelling activities<br><b>Physical, Practical and Technical</b> -Contraception  |                                     | <b>Literacy &amp; Numeracy</b> - Budgeting, graph, monthly cycles<br><b>Communication</b> - Debates – designer baby<br><b>Problem Solving</b> - Vaccination -programmes<br><b>Collaboration</b> -Modelling activities<br><b>Physical, Practical and Technical</b> -Contraception   |   | <b>Literacy &amp; Numeracy</b> - Budgeting, graph, monthly cycles<br><b>Communication</b> - Debates – designer baby<br><b>Problem Solving</b> - Vaccination -programmes<br><b>Collaboration</b> -Modelling activities<br><b>Physical, Practical and Technical</b> -Contraception |   |
| <b>Cultural development</b> | <a href="#">See SMSC Plan</a>   |                                     |  |   |  |   |
| <b>Summary</b>              | <b>By the end of year 9 pupils should confident in the following topics for KS3 Science:</b><br><br>Plant Growth – Reactions in plants, plant adaptations, plant products, growing crops, farming problems, organic farming. Biology Revision – Cells, systems and movement, other organ systems, reproduction and health, energy in ecosystems, genetics and evolution |                                     |  |   |  |   |
|                             | <b>Autumn 1</b><br>Biology  | <b>Autumn 2</b><br>Chemistry        | <b>Spring 1</b><br>Physics   | <b>Spring 2</b><br>Biology                          | <b>Summer 1</b><br>Chemistry   | <b>Summer 2</b><br>Physics                    |
| <b>Year 10</b>              | Component 1: The Human Body   | Component 3: Elements and Compounds | Component 5: Energy, Forces and structure of matter  | Component 2: Environment, Evolution and Inheritance | Component 4: Chemistry in our world  | Component 6: Electricity, Magnetism and Waves |

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| <p><b>Threshold concepts</b></p> | <p>Organ systems and energy. Respiration, transportation</p> <p>Healthy body, maintained diet, healthy lifestyle. Infectious diseases. Bodies defence system</p> | <p>Matter, atoms and particles</p> <p>Elements and the periodic table. Metals and non-metals. Atoms are building blocks for all substances</p> <p>Filtration, Polymers</p> | <p>Forces and push and pull. Energy transfer. Braking force causing an energy transfer</p> <p>Renewable and non-renewable energy. Neutrons and protons and gamma rays</p>   | <p>Life on Earth, photosynthesis, carbon dioxide. Fuels and respiration process</p> <p>Living organism's interaction with one another. Human behaviours and detrimental on population</p> <p>Natural selection, bio-diversity and how organisms are related.</p> <p>Humans and genetic engineering</p> | <p>Acids react with metals, alkalis and bases to produce compounds known as salts.</p> <p>Chemical reactions and changes in temperature</p> <p>Earth's atmosphere, human activities and increase in amounts of substances in environment</p> <p>Water and safety and essential to health</p> | <p>Electricity, domestic and industrial supplies to energy.</p> <p>Electric current is a flow of electrical charge and measured in amps</p> <p>Direct current (d.c) is supplied by cells and alternating current (a.c) is supplied by mains</p> <p>Electric current, electric charge. Electromagnetic</p> |
| <p><b>Big Questions</b></p>      | <p>What is the body made up of?</p> <p>How does the body work?</p> <p>How does the body fight disease?</p> <p>How is the body coordinated?</p>                   | <p>What are substances made up of?</p> <p>How does structure affect properties?</p> <p>How can you separate mixtures?</p> <p>Where do we get metals from?</p>              | <p>How is energy transferred?</p> <p>Where do we find our energy resources?</p> <p>How does a force make an object move?</p> <p>What affects speed and stopping distance?</p> <p>What types of radiation are there?</p> | <p>What are the feeding relationships between living organisms?</p> <p>Why do specific species live in certain areas?</p> <p>How was life on earth developed?</p> <p>Why do we look similar to our parents?</p>  | <p>How do acids affect the environment?</p> <p>What affects the rate of a reaction?</p> <p>What is the earth's atmosphere made up of now?</p> <p>How are humans impacting on the atmosphere?</p> <p>How do we make water safe for drinking?</p>  | <p>How does electricity work?</p> <p>What makes electricity safe in our homes?</p> <p>How do magnets work?</p> <p>How are electromagnetic waves different to each other?</p>  |

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| <b>Skills</b>               | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures pupils can work and communicate with each other to achieve goals.</p> |   | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures pupils can work and communicate with each other to achieve goals.</p> |   | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures pupils can work and communicate with each other to achieve goals.</p> |  |
| <b>Cultural development</b> | <a href="#">See SMSC Plan</a>   |   |   |   |   |  |
| <b>Summary</b>              | <p>Pupils on the Combined Science pathway will be covering Components 1 &amp; 2 - Entry Level Certificate will be co- taught the AQA Entry Level Certificate and the AQA Combined Science Trilogy course over years 10 &amp; 11. Pupils will follow similar topics during Entry level Certificate with the ability to stretch and challenge each pupil with the extra content required for GCSE. This will gain those 2 GCSEs and/or the Entry Level Certificate.</p> <p><b>In year 10 pupils will know and have learnt:</b></p> <p>Components 1 &amp; 2 of the ELC pupils will cover: The human body, Environment, Evolution and Inheritance. Components 3 &amp; 4 will cover: Elements, Mixtures, Compounds and chemistry in our world. Components 5 &amp; 6 will cover: Energy, forces, structure of matter, electricity and magnetism.</p>  |   |   |   |   |  |
|                             | <p style="text-align: center;"><b>Autumn 1</b></p> <p style="text-align: center; color: green;">Biology</p>   | <p style="text-align: center;"><b>Autumn 2</b></p> <p style="text-align: center; color: red;">Chemistry</p> | <p style="text-align: center;"><b>Spring 1</b></p> <p style="text-align: center; color: blue;">Physics</p>  | <p style="text-align: center;"><b>Spring 2</b></p> <p style="text-align: center; color: green;">Biology</p> | <p style="text-align: center;"><b>Summer 1</b></p> <p style="text-align: center; color: red;">Chemistry</p>   | <p style="text-align: center;"><b>Summer 2</b></p> <p style="text-align: center; color: blue;">Physics</p> |

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| <p><b>Year 11</b></p>            | <p>Cell Biology</p> <p>Organisation</p> <p>Infection and Response</p> <p>Bioenergetics</p>  | <p>Atomic structure and the periodic table</p> <p>Bonding structures and properties of matter</p> <p>Quantitative Chemistry</p> <p>Chemical changes</p>   | <p>Energy</p> <p>Electricity</p> <p>Particle model of matter</p> <p>Atomic Structure</p>   | <p>Homeostasis and response</p> <p>Inheritance and evolution</p> <p>Ecology</p>   | <p>The rate and extent of chemical changes</p> <p>Organic Chemistry</p> <p>Chemical Analysis</p> <p>Chemistry of the atmosphere</p>  | <p>Forces</p> <p>Waves</p> <p>Magnetism</p>   |
| <p><b>Threshold concepts</b></p> | <p>Cell Biology: Unit of the cell, structural differences between cells. Functions within the organism</p> <p>Organisation: Human digestive system which provides the body with nutrients and the respiratory system that provides it with oxygen and removes carbon dioxide</p> <p>Infections and Response: Pathogens, micro-organisms. Bacteria, infectious diseases.</p> <p>Bioenergetics: Sun, photosynthesis in order to make food. Oxygen</p> | <p>Atomic structure and the periodic table: periodic table, chemists. Chemical elements, physical and chemical properties</p> <p>Bonding structures and properties of matter: Theories of structure and bonding to explain the physical and chemical properties of materials.</p> <p>Quantitative Chemistry: Quantitative analysis, formulae of compounds and equations for reactions</p> | <p>Energy: Energy emerged in the 19th century. Steam engines, heat engines</p> <p>Electricity: Electric charge difference in the microstructure of conductors, semiconductors and electric circuits</p> <p>Particle model of matter: Behaviour of solids, liquids and gases. Engineering</p> <p>Atomic Structure: Ionising radiation, radioactivity. Structures and forces</p> | <p>Homeostasis and response: Cells in the body. Temperature, pH, food and water</p> <p>Inheritance and evolution: Chromosomes, meiosis</p> <p>Ecology: Sun as a source of energy, Eco-systems, carbon and water. Living world</p> | <p>The rate and extent of chemical changes: Chemical reactions, reactivity of chemicals. Variables to speed or slow up reaction</p> <p>Organic Chemistry: Carbon compounds, carbon atoms, chains</p> <p>Chemical Analysis: Qualitative tests, chemicals. Gas, colour change, insoluble solid</p> <p>Chemistry of the atmosphere: Qualitative tests, chemicals. Gas, colour change, insoluble solid</p> | <p>Forces: Engineers, analysis. Bridges, roads, fairground rides. Mechanical and forces</p> <p>Waves: Natural and man-made systems. Energy transfer</p> <p>Magnetism: Electromagnetic, engineers. Electric current. Communication</p> |



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| <b>Big Questions</b> | <p><u>Cell Biology</u></p> <p>How do microscopes work?</p> <p>What are chromosomes?</p> <p>What cells specialise?</p> <p>How do cells transport things to their surroundings?</p> <p><u>Organisation</u></p> <p>What are enzymes</p> <p>How does the circulatory system work?</p> <p>How is food broken down?</p> <p><u>Infection and response</u></p> <p>What is a pathogen?</p> <p>How do drugs work?</p> | <p><u>Atomic structure and periodic table</u></p> <p>How are atoms and elements different?</p> <p>How are mixtures separated?</p> <p>What properties do metals and non-metals have?</p> <p>How is the atomic structure written?</p> <p><u>Bonding structures and properties of matter</u></p> <p>What states of matter?</p> <p>What are the three types of bonding?</p> <p><u>Quantitative Chemistry</u></p> <p>How is relative formula worked out?</p> <p>How is mass conserved?</p> | <p><u>Energy</u></p> <p>How is energy stored?</p> <p>What happens to unwanted energy?</p> <p>How do you work out efficiency?</p> <p>How are our energy resources needed?</p> <p><u>Electricity</u></p> <p>How is electricity produced?</p> <p>How is energy used in our home?</p> <p>How do you measure current/potential difference and resistance?</p> <p><u>Particle model of matter</u></p> <p>How are particles arranged?</p> | <p><u>Homeostasis and response</u></p> <p>How does our nervous system respond to stimuli?</p> <p>What is a reflex action?</p> <p>How do hormones work?</p> <p>What features of puberty differ in male and females?</p> <p><u>Inheritance, Variation and Evolution</u></p> <p>What is the correct order of the size in nucleus?</p> <p>How does asexual reproduction differ from sexual reproduction?</p> <p>How do fossils help to explain evolution?</p> | <p><u>The rate and extent of chemical changes</u></p> <p>How can we speed up a reaction?</p> <p>What method would you use to calculate a reaction?</p> <p><u>Organic Chemistry</u></p> <p>How is crude oil broken down?</p> <p>How are hydrocarbons used?</p> <p><u>Chemical Analysis</u></p> <p>What is a pure substance?</p> <p><u>Chemistry of the atmosphere?</u></p> <p>How has climate changed our atmosphere?</p> <p>What pollution is man responsible for?</p> | <p><u>Forces</u></p> <p>What is the difference between weight and mass?</p> <p>What are Newton's laws?</p> <p>How do you calculate speed/acceleration and velocity?</p> <p><u>Waves</u></p> <p>What are the two wave types?</p> <p>What are the main electromagnetic waves?</p> <p><u>Magnetism</u></p> <p>What metal do magnets contain?</p> <p>How does an electromagnet work</p> <p>How do you make an electromagnet stronger?</p> |

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|        | <p>What are the differences in diseases?</p> <p><u>Bioenergetics</u></p> <p>How does photosynthesis work?</p> <p>How does respiration affect exercise?</p>  | <p><u>Chemical changes</u></p> <p>How do acid and alkalis react?</p> <p>What is electrolysis?</p> <p>How do metals react with water/acids?</p>  | <p>What makes a substance dense?</p> <p>What happens to particles when they change states?</p> <p><u>Atomic Structure</u></p> <p>How do you work out radioactive decay?</p> <p>What is half-life?</p> <p>What is the current model of the atom?</p>   | <p>What is selective breeding?</p> <p><u>Ecology</u></p> <p>How are food chains represented?</p> <p>How is the quadrat used?</p> <p>How has human activity affected the biodiversity?</p> <p>How is population size affected by competition?</p> |  |  |
| Skills | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures</p> | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures</p> | <p><b>Literacy and Numeracy</b> – Pupils will be able to explain some theories that help us understand how things work. Mathematical skills are hugely important in Science, where a wide range will need to be applied to a variety of situations</p> <p><b>Physical, Practical and Technical</b> – Pupils will also develop practical skills, planning, collecting and presenting data and analysing</p> <p><b>Metacognition</b> – Pupils will develop a good level of understanding of scientific principles and skills through the retrieval and interleaving of assessments throughout the course</p> <p><b>Communication</b> – By the end of this course pupils will be able to describe and explain a range of concepts and processes</p> <p><b>Collaboration</b> –Working together covering the teacher devised practical assessments ensures</p> |  |  |  |

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|                             | pupils can work and communicate with each other to achieve goals.   | pupils can work and communicate with each other to achieve goals. | pupils can work and communicate with each other to achieve goals. |
| <b>Cultural development</b> | <a href="#">See SMSC Plan</a>   |   |   |
| <b>Summary</b>              | <p><b>In year 11 pupils will know and have learnt:</b></p> <p>GCSE paper 1 content: Cell biology, Organisation, Infection and response, and Bioenergetics for biology; atomic structure and the periodic table, bonding, structure &amp; properties of matter, Quantitative chemistry, Chemical changes and Energy changes in chemistry; energy, Electricity, Particle model of matter and Atomic structure for physics.</p> <p>GCSE paper 2 content: Homeostasis and response, Inheritance, Variation &amp; evolution and Ecology for biology; The rate and extent of chemical change, Organic chemistry, Chemical analysis, Chemistry of the atmosphere and Using resources for chemistry; Forces, Waves, Magnetism and Electromagnetism for Physics.</p> |   |   |