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| Science matters because knowing how the world works isn’t easy.  We want our students to know that asking questions is the key to understanding what is going on. We believe that studying Science helps us to be able to ask questions.  Making sense of our world can sometimes be hard, and we believe that Science helps us to do that. But Science as a subject also opens doors.  Key Stage 3 leads to GCSE, which can lead to A Levels, BTEC, apprenticeships, college, further education and employment.  Science opens all of these doors.  But the real reason that Science matters to students is because questions are there to be answered.   * To enable all pupils to undertake national qualifications at the appropriate level to ensure post school progression into a positive destination * To develop the knowledge, skills and qualities to support our pupils to take a meaningful and worthwhile place in society. * To experience challenge and success * To encourage a healthy lifestyle * To further develop the skills for life learning and work | | | | | |
| **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |

Y7

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| **Transition to KS3 Science**  **Forces** | **Matter**  **Cells and Movement/Organisms** | **Energy** | **Genes** | **Reactions** | **Electromganets**  **Earth** |
| * Overview of teaching to come throughout the two years at KS3 * Many KS2 students have never encountered a Science Lab. Students are introduced into how to accurately and safely use scientific equipment.   **Forces Topic - Big Idea –**  **Objects can affect other objects at a distance**  Building on KS2 forces.  Introduction to force diagrams, unbalanced and balanced forces and forces associated with deforming objects, eg stretching and associated investigation skills.  Leading to Forces in Year 8 | **Matter – = Big Idea – All matter in the Universe is made of very small particles**.  Building on KS2 simple introduction to the states of matter.  Properties of states of matter in terms of particle model and changes of state and associated investigation skills for separating.  Leading onto Year 8 and KS4 Atomic and Bonding topics  **Cells and Movement**  **Organisms ( Cells) - Big Idea - Organisms are organised on a cellular level**  Building on KS2 life Processes,  The structure of plant, animal and bacteria cells. Developing microscope skills.  Leading to Year 8 Breathing and Digestion, KS4 Cell Biology and Organisation | **Energy –Big Idea - The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event**  Introduction of the new concept of Energy. Including energy stores, transfers and sources.  Leading to energy in year 8 | **Genes – Big idea - Genetic information is passed down from one generation of organisms to another. The diversity of organisms, living and extinct, is the result of evolution**  Building on KS2 life process of reproduction in some plants and animals and evolution and inheritance.  Structure and function of male and female reproductive organs, development of foetus.  Variation and adaptation of organisms.  This is part of the PSHE curriculum at KS2 and 3.  Leading to KS4 Homeostasis and response I**nheritance, Variation and Evolution** | **Chemical reactions –Big idea - All matter in the Universe is made of very small particles**.  Student have previously encountered Physical changes, chemical reactions are now introduced. Identification of acids and alkalis and reactions, e.g. neutralisation and associated investigation skills.  Leading to Year 8 Reactions Topic | **Electricity and electromagnets. Big Idea: Objects can affect other objects at a distance**  Build on KS2 electricity topic. Circuits in series and parallel, current, potential difference and resistance. Static electricity and associated practical activities.  Ideas used in Electronmagnets in year 8.  Leading to KS4 Electricity Topic  **Earth –Big Idea - Our solar system is a very small part of one of billions of galaxies in the Universe**  Building on KS2 Earth and Space. Composition of the solar system, day and night, seasons and phases of the moon. |

Y8

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| **Matter**  **Forces** | **Organisms**  **Electricity and Electromagnets** | **Chemical Reactions** | **Energy** | **Ecosystems**  **Waves** | **Earth** |
| **Matter – NC Big Idea – All matter in the Universe is made of very small particles**  Building on Year 7 Matter  Periodic table, differences between elements and compounds, metal and non-metals, introduction chemical formulae and equations and associated investigation skills.  Leading to KS4 Atomic Structure, Bonding and fundamental ideas running through all chemistry KS4  **Forces Topic - Big Idea –**  **Objects can affect other objects at a distance. Changing the movement of an object requires a net force to be acting on it**  Building on year 7 Forces  Pressure, Density and moments and associated investigation skills    Leading to Forces Topic in KS4 | **Breathing and Digestion**  **Organisms - Big Idea - Organisms are organised on a cellular level**  Building on Year 7 organisms  Structure and function of organ systems, nutrition, healthy lifestyles and associated investigation skills.  Leading to KS4 Cell Biology and Organisation  **Electricity and electromagnets. NC Big Idea: Objects can affect other objects at a distance**  Building of Year 7 Electricity – Magnetism and electromagnets and associated practical work.  Leading to Electromagnets KS4 | **Chemical reactions – NC Big idea - All matter in the Universe is made of very small particles**.  Building on Year 7 Chemical Reactions  Acids and Alkalis, oxidation of metals, combustion, displacement reactions. and associated investigation skills.  Leading to KS4 Chemical Change, Energy and Changes | **Energy –Big Idea - The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event**  Building on KS2 and year 7 Energy  Thermal Energy transfers, reduction of thermal transfer, power and cost of electricity. (linking to Environmental concerns)  Leading to Energy KS4 topic | **Ecosystems –Big idea –**  **Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms**  Building on KS2 Living things and habitats.  Relationships and composition of ecosystems and associated fieldwork sampling techniques.  Leading to KS4 Ecology | **Waves – NC Big Idea - Objects can affect other objects at a distance.**  Building on KS2 Light and Sound  Introduction of Types of waves including Light, sound and associated practical activities.  Leading to waves Year 9 topic  **Earth - NC Big Idea - The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate**  Building on KS2 Rocks  Introduction of rock and rock cycle,**.**  Leading to KS4 Chemistry of atmosphere and using resources |

Y9

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| **Ecosystems**  **Earth** | **Waves**  **Reactions** | | | **Genes** | | **Electricity and Electromagnets** | | **Atomic Structure ( Chemistry)** | | **Cell Biology** |
| * **Ecosystems – Big idea - Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms**   Building on year 7  Structure and function of plants.  Introduction to photosynthesis and limiting factors.  Building on Year 8 : Organ systems linking to Respiration  Leading to Bioenergetics KS4  **Earth - NC Big Idea - The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate**  Building on Year 8 Rocks  Introduction, evolution of the atmosphere, climate change, carbon cycle, water cycle, and Human impact**.**  Leading to KS4 Chemistry of atmosphere and using resources | | **Waves Big Idea**   * **Objects can affect other objects at a distance.**   Building on Year 8 light and sound.  Electromagnetic Spectrum, wave speed and wave investigations  Built on in KS4 Waves topic  **Chemical reactions – NC Big idea - All matter in the Universe is made of very small particles**.  Building on Year 8 Chemical Reactions  exo/ endothermic, displacement reactions. and associated investigation skills.  Leading to KS4 Chemical Change, Energy and Changes | **Genes Big Idea**  **Genetic information is passed down from one generation of organisms to another.**  **Organisms are organised on a cellular level.**  Building on Year 7  DNA and inheritance, cloning and genetic engineering.  Leading to inheritance, variation and evolution | | **Electricity and electromagnets. Big Idea: Objects can affect other objects at a distance**  Build on Year 7 electricity topic. Circuits in series and parallel, current, potential difference and resistance.  Building of Year 8 magnets – Magnetism and electromagnets and associated practical work.  Leading to KS4 Electricity Topic  Leading to Electromagnets KS4 | | **Introduction to Key Concepts/Fundamentals of KS4**  **(Matter and Reactions )**  **Atomic Structure**   * **All matter in the Universe is made of very small particles**.   Building on Year 7 and year 8  Matter and Reaction Topics  Atoms, Elements and Compounds. Periodic Table and group properties and reactions  Fundamentals for all Chemistry Topics | | **Organisms ( Cells)**  **Cell Biology**  **- Big Idea - Organisms are organised on a cellular level**  Building on Year 7 Cells  The structure of plant animal and bacteria cells. Further development of microscope skills.  Cell division and Stem cells  Exchange of substances | |

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| **Energy**  Y10  **Bonding** | **Organisation**  **Electricity** | **Infection and Response** | **Chemical Change**  **Bioenergetics** | **Quantitative Chemistry**  **Energy of chemical change**  **Atomic Structure** | **Organic Chemistry**  **Chemical Analysis**  **Chemistry of Atmosphere** |
| **Energy**  **Energy**  **Big Idea - The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event**  Building on Year 7 and year 8  Energy topics  Energy stores, transfers and sources.  GPE, KE and Thermal energy and associated equations  Specific Heat capacity  Thermal Energy transfers, reduction of thermal transfer, power and cost of electricity. (linking to Environmental concerns)  **Matter and Reactions**  **Bonding**  **All matter in the Universe is made of very small particles**.  Building Year 7 , 8 and atomic structure ( KS4)  Ionic , covalent and metallic bonding | **Organisms ( Cells)**  **Organisation**  **Big Idea - Organisms are organised on a cellular level**  Building on Year 8 organ systems  Digestion system, circulatory system, Health and diseases ( non-communicable)  Building on Plant organisation ( year 7 and Year 9)  **Electricity and electromagnets.**  **NC Big Idea: Objects can affect other objects at a distance**  **Electricity**  Building on year 7  Circuits in series and parallel, current, potential difference and resistance.  Electricity in the home.  National Grid. | **Infection and Response**  **Organisms ( Cells)**  **Big Idea - Organisms are organised on a cellular level**  Building on Year 7 and Year 10 Cell Biology and organisation  Communicable Disease, fighting disease and developing drugs **Particle model of matter**  **Chemical change**  **Matter and Reactions**  **All matter in the Universe is made of very small particles**  Building on Year 7 and Year 8 Matter and chemical reaction topics  Acids and Bases  Reactivity series  Electrolysis | **Particle Model Of Matter**  **Big Idea - The total amount of energy in the Universe is always the same but can be transferred from one energy store to another during an event**  Building on Energy KS4 topic  Particle model, Internal Energy, Latent Heat, Specific Heat capacity.  **Bioenergetics**  **Organisms ( Cells)**  **Big Idea - Organisms are organised on a cellular level,**  **Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms**  Building on Year 7organism, Year 9 Ecosystem and KS4 Cell Biology and organisation,  Respiration  Photosynthesis | **Quantitative Chemistry**  **Matter and Reactions**  **All matter in the Universe is made of very small particles**  Relative formula mass  Mole  Conservation of mass  Limiting reactants  Concentration of solutions  **Energy of chemical change**  **Matter and Reactions**  **All matter in the Universe is made of very small particles**  Building on Year 9 Reactions topic  Exothermic  Endothermic  Bond energies  **Atomic Structure**  **Waves Big Idea**   * **Objects can affect other objects at a distance.**   New content not previously covered in KS3  First part of topic is cross over with Chemistry KS4 Atomic Structure  Atoms and Radiation, Model of atom , Isotopes  Ionising Radiation  Half Life Graphs  Nuclear equations | **Earth and Reactions**  **Organic Chemistry**   * **- NC Big Idea - The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate** * **All matter in the Universe is made of very small particles**.   Building on Year 7 and Year 8 Matter and Earth topics  Properties of Hydrocarbons, Fractional Distillation and  Cracking      **Matter and Reactions**  **Chemical Analysis**  **All matter in the Universe is made of very small particles**.  Building on Year 7 and Year 8 Matter and Reaction topics  Purity and Formulations,  Paper Chromatography and Gas Tests  **Earth and Reactions**  **Chemistry of atmosphere**   * **- Big Idea - The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate**   Building on Earth topic in Year 8  evolution of the atmosphere, and human impact of environment (climate change and air pollution) |
| **Homeostasis**  Y11  **Forces** | **Rates**  **Inheritance** | **Waves**  **Electromagnetism**  **Ecology** | **Using Resources** |  |  |
| **Homeostasis**  **Organisms ( Cells)**  **Organisation**  **Big Idea - Organisms are organised on a cellular level**  Homeostasis  Nervous system  Endocrine system  **Forces**   * **Forces Topic - NC Big Idea –**   **Objects can affect other objects at a distance. Changing the movement of an object requires a net force to be acting on it**  Building on Year 7 and 8  Contact and noncontact forces, Resultant forces recap  Work done  Elasticity  Speed and velocity  Acceleration  Terminal velocity  Newton’s laws  Motion RP  Stopping distance and reaction time  Momentum | **Rates**  **Matter and Reactions**  **All matter in the Universe is made of very small particles**  **Inheritance**  **Genes Big Idea**  **Genetic information is passed down from one generation of organisms to another.**  **Organisms are organised on a cellular level.**  Building on Year 7 and Year 9,  Recaping on KS4 Cell Biology topic  Reproduction  Meiosis  Genetic inheritance  Evolution  Selective breeding  Genetic engineering  Fossils  Antibiotic resistance  Classification | **Electromagnetism**  **Electricity and electromagnets.**   * **NC Big Idea: Objects can affect other objects at a distance**   Building on Year 8 Topic  Magnets recap  Electromagnetism  Motor effect  Electric motor  **Ecology**  **Ecosystems – NC Big idea - Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms**  Building on year 7 and 9  Competition  Adaptations  Food chains  Water cycle  Carbon cycle  Biodiversity  Global warming  **Waves**  **Waves Big Idea**   * **Objects can affect other objects at a distance.**   **Building on waves topic Year 8 and Year 9**  Transverse and Longitudinal  Frequency, Period and Wave speed  Investigating Waves ( RPA)  Refraction  Electromagnetic Waves | **Using Resources**  **Earth**   * **- NC Big Idea - The composition of the Earth and its atmosphere and the processes occurring within them shape the Earth’s surface and its climate**   Building on Earth topic in Year 8  Finite and renewable resources  Water  Alternative extraction methods  Life cycle of products  Reuse and recycle |  |  |