

Science KS3 Curriculum

Overview:

By the end of KS3 we would like students to have a broad and balanced knowledge of several key topics, that encourages students to explore and understand the world around them. The curriculum aims to encompass all of the national curriculum and follow a spiral structure, constantly building upon previous knowledge in order to reinforce understanding at a deeper level. We wish students to develop into confident, resilient and reflective learners who enjoy science and move on and up to be successful at GCSE. We ensure that we also prepare students in both practical and mathematical skills, in order for them to fully access the curriculum and explore investigations scientifically.

Content:

| | Term 1 | Term 2 | Term 3 | Term 4 | Term 5 | Term 6 |
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| Year 7 | <p>Biology - The differences between species, how cells build up to organisms and how to use a microscope</p> <p>Chemistry – How we experience different states of matter and how matter is composed of atoms, compounds and mixtures.</p> <p>Physics – How we experience forces,</p> | <p>Biology – Our digestive system, the effects of a healthy diet, and how poor diet can impact health.</p> <p>Chemistry – Introduction to the periodic table of elements, and the chemical and physical properties of those elements.</p> <p>Physics – How we experience speed, motion and how to measure and record the speed of objects.</p> | <p>Biology – The role of diffusion in the body. gas exchange in the lungs and the effects of smoking and lung damage.</p> <p>Chemistry – An introduction to basic chemical reactions, including how we represent them and the different types.</p> <p>Physics – How we experience gravity. Measuring weight as a force, mass and the effect of mass on different planets.</p> | <p>Biology – The structure and function of the skeleton, including joints and looking at the heart.</p> <p>Chemistry – We discover what the Earth is made out of and we look at the rock cycle.</p> <p>Physics – In this topic we take a look at magnets and their effects. We also look into space and the structure of our solar system.</p> | <p>Biology – We look at flowers, plants and their importance to us.</p> <p>Chemistry – In this topic we look in depth at acids, alkali and neutralisation.</p> <p>Physics – We look at waves and their effects in mechanical situations, such as sound, water and other vibrations.</p> | <p>Biology – In this topic we look at reproduction, including the menstrual cycle, gestation and birth. We also compare plant and animal reproductive methods.</p> <p>Chemistry – We recap and build upon our work with the periodic table further investigating properties.</p> <p>Physics – We continue with the theme of waves and now compare them to electromagnetic waves.</p> |

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| | moments and how to measure them. | | | | | |
| Year 8 | <p>Biology – We learn about respiration, both anaerobic and aerobic, and the impact of exercise and smoking.</p> <p>Chemistry – Here we recap on chemical reactions, both endothermic and exothermic.</p> <p>Physics – In this topic we learn about fuels, energy resources as well as looking at domestic fuel bills and costs.</p> | <p>Biology – In this topic we look at the leaves and how they are adapted for photosynthesis.</p> <p>Chemistry – Here we look at elements compounds and mixtures in greater detail, as well as a variety of separation techniques.</p> <p>Physics – We look at the particle model including its limitations, as well as chemical and physical changes.</p> | <p>Biology - The roles of polymers and monomers in the context of food, carbohydrates, proteins and fats.</p> <p>Chemistry – We look in depth at the composition of the atmosphere and the carbon cycle.</p> <p>Physics – In physics this term we look at the transfer of thermal energy as well as the different types of energy stores.</p> | <p>Biology – We look at food chains, webs and the interdependence of organisms.</p> <p>Chemistry – at this point we look at the reactivity series and the use of carbon to refine metals.</p> <p>Physics – In physics we look at series and parallel circuits, and the relationship between current, voltage and resistance.</p> | <p>Biology – We look at the work of Watson, Crick and Franklin. DNA mutations, and the importance of gene banks.</p> <p>Chemistry – In this topic we discover the properties of gases and their application.</p> <p>Physics – We look at the mechanics of the eye and the interactions of light, colour and reflection.</p> | <p>Biology – Finally we look at animal and bacterial cells and how they build to tissues and organs.</p> <p>Chemistry – In chemistry we recap and build on word equations, reactants and products.</p> <p>Physics – And finally in physics we look at interacting forces, energy transfers and work done.</p> |

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| <p style="text-align: center;">Year 9</p> | <p>Biology – In this topic we learn about Evolution. Building on students’ knowledge of DNA, we will explore how mutations lead to genetic variation within a species</p> <p>Chemistry – Here we recap on reactions between acids and alkalis. Students learn how the salt formed depends on the acid and alkali</p> <p>Physics – In this topic students will explore the behaviour of light when it encounters a range of different mediums with different properties.</p> | <p>Biology – Students will develop their understanding of body systems by examining the nervous system and how it response to stimulus.</p> <p>Chemistry – Students will bring all their knowledge on chemical reaction together and are introduced to balancing symbol equations.</p> <p>Physics – Electricity units will be revisited here. Students will construct series and parallel circuits, the advantages and disadvantages of each will be explored.</p> | <p>Chemistry – The history of the atomic model will be taught this term. Students will look at the current model we use to describe atoms and how new technology has developed our understanding. The understanding of subatomic particles will be developed and the significance of their properties determined.</p> <p>Physics – Using students understanding of the atomic model, this unit will explain electrostatic forces between positive and negative charges. The study of non-contact forces and Hooke’s law provides students with opportunity to bring together numerous strands of working</p> | <p>Biology – In the final biology unit of KS3 students will build on many important biological concepts from previous topics.</p> <p>Cells- Students will explore cells in more detail, identifying key differences between eukaryotic and prokaryotic cells. Students will also revisit microscopy to examine cells and sub-cellular structures along with calculating magnification.</p> <p>Life processes - these processes depend on biological molecules whose structure is related to their function. Students will revisit enzymes as proteins and create links to their importance in controlling many life processes such as respiration. Students will investigate photosynthesis in more detail, looking at how environmental factors affect the rate of this reaction in plants.</p> <p>Working Scientifically -Students will continue to develop these key skills by using microscopy to examine cells and sub-cellular structures. This will give students an opportunity to identify risks, select appropriate equipment, write methods and make observations.</p> | <p>Physics- In the final physics unit of KS3 students will build on many important physical concepts from previous topics.</p> <p>Density- Students will revisit density and how this can be calculated using measurement of regular and irregular solids as well as liquids. Density of different states of matter will be explored and students will evaluate the quality of the data obtained in relation to the method used. Students will have to draw together their Working Scientifically skills to ensure they select appropriate methods to determine the density of objects.</p> <p>States of matter- Students will then further explore the states of matter by quantifying the amount of energy required to change the state of a substance.</p> <p>Energy- They will also draw together knowledge of the</p> |
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| | | | scientifically developed over the last three years including the identification of variables, risk assessment, data collection and critical analysis of results. | | energy stored by different states to quantify the amount of energy required to change the temperature of a substance. Pressure- Gases and pressure, caused by the force exerted by particles, will be explored along with the consequences of changing gas volume or pressure. |
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