

Curriculum intent: Science encompasses everything that we are and allows us to make sense of the world around us. Science at The Hart School is more than just a core subject. We believe an outstanding science education should develop students' curiosity and scientific knowledge to question the world in which we live, enable critical-thinking and encourage students to become socially aware global citizens.

Our Science faculty has planned an inspiring, inclusive, and diverse curriculum that is designed to engage and enthuse students with the real-life applications of the subject whilst promoting ambition and aspirations for their future.

In an ever-changing world, in which STEAM subjects are at the forefront of advancements for the future, we want to prepare our students for this by not only looking at the knowledge of the subject, but also the methods, processing skills and applications associated with it. This ensures that our students are scientifically literate, able to evaluate what they see in the news and the world around them and make informed decisions that will affect their future lives and the planet.

| | Autumn 1 | | Autumn 2 | | Spring 1 | Spring 2 | Summer 1 | | Summer 2 | |
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| These topics are taught in small bitesize chunks and revisited regularly. | Intro to Science - Maths in Science | Types of reaction | Energy - heating & cooling | Health | Wave interactions | Chemical energy | Forces and machines | Cell Biology | Fundamentals of Chemistry | |
| Additional support links: Here are links to additional resources which will help your child | KS3 working scientifically support - BBC bitesize | KS3 Reactions support - BBC bitesize | KS3 Heating and cooling support - BBC Bitesize | KS3 Health and disease support - BBC bitesize | KS3 Waves support - BBC bitesize | KS3 Exothermic and endothermic reactions support - BBC bitesize | KS3 Forces and motion support - BBC bitesize | KS3 Cells and organisation support - BBC bitesize | KS3 Periodic table and properties support - BBC bitesize | |
| Knowledge: Included here is the specific knowledge your child will learn in detail | This topic builds on mathematical concepts and skills the students have learnt in lower KS3 and KS2. It has been placed at the beginning of year 9 to enable to students to have the mathematical and scientific skills to access the KS3 Year 9 curriculum and beyond. Students will be able to apply mathematical concepts and calculate results. They will rehearse how to present observations and data using appropriate methods, including tables and graphs. They will be able to interpret observations and data to draw conclusions. | Understanding of chemical changes began when people began experimenting with chemical reactions in a systematic way and organizing their results logically. Knowing about these different chemical changes meant that scientists could begin to predict exactly what new substances would be formed and use this knowledge to develop a wide range of different materials and processes. The extraction of important resources from the earth makes use of the way that some elements and compounds react with each other and how easily they can be 'pulled apart'. | Temperature is a measure of how hot things are and therefore their thermal energy. Substances will change state when the particles have enough energy to overcome the forces. Students will further develop their knowledge of how substances get warmer and cooler. | Health is the state of physical, mental and social well-being. It is not just being free from disease. Factors can work together to affect physical and mental health. Lifestyle choices such as smoking, drinking alcohol and taking drugs has an impact on the body. Exercise is a key way in ensuring that our bodies stay healthy. A Pathogen is a microorganism that can cause disease. Microorganisms are tiny organisms that can only be seen using a microscope. Students will look at how microorganisms can spread from person to person and look at the work of Ignaz Semmelweis and Edward Jenner. | Assessment 1 | Waves are one of the ways in which energy may be transferred between stores. It is an oscillation or vibration that transfers energy without transferring any material. Students will learn more about the frequency and apply the equation. A focus on light waves including reflection, refraction and dispersion of light will be delivered | Students develop their understanding of chemical reactions by looking at exothermic and endothermic reactions and energy profiles. They then look at real world applications of catalysts in industry and identify the benefits and disadvantages of them. | A force causes an object to undergo a specific change. Unbalanced forces cause changes in speed, shape or direction. Students will be able to calculate work done. Students will complete a practical linked at Hooke's Law and apply their knowledge of elastic limit to this. Students then look at pressure in fluids and how this can be used to make hydraulic machines. | cells have become specialised. These small structures were first observed with the discovery of light microscopes and further enhanced due to the evolution of electron microscopy. A variety of processes are required to transport substances into and out of cells such as diffusion, osmosis and active transport and that exchange surfaces have become adapted to allow rapid exchange. DNA is the genetic material of a cell. In a nucleated cell the DNA is held in chromosomes. This allows cell division to occur more effectively. | The periodic table provides chemists with a structured organisation of the known chemical elements from which they can make sense of their physical and chemical properties. The historical development of the periodic table and models of atomic structure provide good examples of how scientific ideas and explanations develop over time as new evidence emerges. The arrangement of elements in the modern periodic table can be explained in terms of atomic structure which provides evidence for the model of a nuclear atom with electrons in energy levels. |
| Skills: Included here is the specific skills your child will learn in detail | | | Analyse patterns, Discuss limitations, Present data, Draw conclusions, Method Writing | | | Analyse patterns, construct explanations, Collect data | | Plan variables, collect data, Test hypothesis, Analyse patterns, Draw conclusions | | |
| Home learning online platform | https://www.carousel-learning.com/ | | | | | | | | | |

CREST award
CREST is a nationally recognised scheme for student-led project work in the STEM subjects (science, technology, engineering and maths). CREST helps young people become independent and reflective learners through enquiry-based project work. Schools will pick the projects that they feel are most suited for their students.

Assessment 2