

**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		
<b>Core Course Topic:</b> These topics are taught in small bitesize chunks and revisited regularly.	Module 5: Chapter 13. Neuronal communication	Module 5: Chapter 14. Hormonal communication	Module 5: Chapter 15. Homeostasis	Module 5: Chapter 16. Plant responses	Assessment 1 - As mock papers (2 papers)	Module 5: Chapter 17. Energy for biological processes	Module 5: Chapter 18. Respiration	Module 6: Chapter 19. Genetics of living systems	Module 6: Chapter 20. Inheritance and variation	Module 6: Chapter 21. Manipulating genomes	Module 6: Chapter 22. Cloning and bio-technology	Module 6: Chapter 23. Ecosystems	Module 6: Chapter 24. Sustainability	Assessment 2 - A level mock papers (3 papers)	Re-teach and revision	A level examinations	A level examinations
<b>Additional support links:</b> Here are links to additional resources which will help your child	<a href="#">Module 5: revision resources</a>					<a href="#">Module 5 revision resources</a>		<a href="#">Module 6: revision resources</a>									
<b>Knowledge:</b> Included here is the specific knowledge your child will learn in detail	Neuronal communication introduces you to how electrical systems are used to monitor and respond to any deviation from the body's steady state. This includes action potentials and transmission between neurones and synapses.	Hormonal communication looks at how specific hormones bring about their effects. Diabetes is used as an example of a defect in a hormonal control system. The kidneys and liver are examined in relation to the removal of toxic products of metabolism.	Homeostasis studies animal responses, which involve nervous, hormonal, and muscular co-ordination.	The homeostasis topic is contrasted with plant responses. Plants use hormones to respond to environmental changes, but they can also be used and exploited commercially.		Energy for biological processes looks in detail at this complex process, including how it is used to drive the production of chemicals, including ATP, and how large organic molecules are synthesised from inorganic molecules.	Respiration studies the series of enzyme controlled reactions which result in energy being transferred to ATP. ATP provides the immediate source of energy for all biological processes.	Genetics of living systems introduces how the genetic control of metabolic reactions determines an organism's growth, development, and function. This also includes the effects of gene mutations on protein functions,	Patterns of inheritance and variations allows you to study how genetic and environmental factors contribute to variation within a population.	Manipulating genomes has many potential benefits such as the treatment of disease but the implications of genetic techniques are of public debate. You will find out how genomes are sequenced as well as how DNA profiling is used in forensics and to determine the risk of certain diseases.	Cloning and biotechnology explores how farmers and growers exploit natural vegetative propagation in the production of uniform crops, as well as the role of scientists in the production of artificial plant and animal clones. The use of micro-organisms in biotechnology to produce food	Ecosystems are dynamic and influenced by both biotic and abiotic factors. You will study the complex interactions which occur between organisms and their environment as well as finding out how materials are passed on and recycled.	Sustainability investigates the factors that determine population size and economic, social and ethical reasons why ecosystems may need to be managed. This includes looking at how biological resources can be used sustainably to support increasing human population.				
<b>Skills:</b> Included here is the specific skills your child will learn in detail	Module 5: <ul style="list-style-type: none"> <li>Describe the structure and function of the human nervous system</li> <li>Explain the principles of hormonal control in humans</li> <li>Describe how hormones are used in human reproduction</li> <li>Describe the process of homeostasis</li> <li>Describe the process of photosynthesis</li> <li>Explain the importance of cellular respiration</li> <li>Calculate the standard deviation to measure the spread of a data set</li> <li>Use student t tests to compare the means of data values of two populations</li> <li>Calculate the respiratory quotient of metabolites</li> </ul>							Module 6: <ul style="list-style-type: none"> <li>Use phenotypic ratios to identify linkage and epistasis</li> <li>Use the chi-squared test to determine the significance of the difference between observed and expected results</li> <li>Use the Hardy-Weinberg principle to calculate allele frequencies in populations</li> <li>Use the correlation coefficient to determine the relationship between two sets of data</li> </ul>									
<b>Home learning online platform</b>	<a href="#">Seneca Biology OCR A</a>																