

“At King’s Oak Academy, every child is a scientist”.

## Lower school curriculum

At King’s Oak Academy, every child is a scientist. They seek to explain the world around them. Our children build theories based on evidence collected and by making observations in the natural and physical world. These theories are supported, modified, or replaced as they find new evidence. Search for evidence in science occurs through an inquiry process that blends curiosity, imagination, and logic. Students learn about the theories and models that are used to describe the natural and physical world. These theories or models help to describe the way the natural and physical world works. Students use these models or theories to make predictions, test these predictions through experimentation and observation and use results to revise and improve the models.

## Course overview































	Reception	Year 1	Year 2	Year 3	Year 4
Overview	<p>Children work scientifically through the Understanding of the World curriculum strand.</p> <p>There is a balance of adult-led and child-initiated learning opportunities which enable children to make sense of the physical world and explore some of the key scientific concepts and skills that they will build on in Year 1 and beyond when working as Scientists.</p>	<p>Students explore topics of:</p> <ul style="list-style-type: none"> <li>🧪 Everyday materials</li> <li>🧪 Animals</li> <li>🧪 Seasonal changes</li> <li>🧪 Humans</li> <li>🧪 Plants and Magnetism.</li> </ul> <p>This allows students to apply scientific knowledge, skills, and conceptual understanding, enabling them to have a lifelong curiosity about the world and develop a scientific mindset.</p>	<p>Students will engage in the topics of:</p> <ul style="list-style-type: none"> <li>🧪 Matter and measurements</li> <li>🧪 Living things and their habitats</li> <li>🧪 The human body and health systems.</li> </ul> <p>Students will become critical thinkers and confident problem-solvers, equipped with the scientific literacy necessary to make informed decisions and engage effectively in a rapidly advancing technological society.</p>	<p>Throughout year 3 students will look at:</p> <ul style="list-style-type: none"> <li>🧪 The topics of forces and magnets</li> <li>🧪 Insects</li> <li>🧪 Rocks and the Earth</li> <li>🧪 Plants</li> <li>🧪 The water cycle</li> <li>🧪 Light waves</li> <li>🧪 The human body and health.</li> </ul> <p>These topics will allow students to make observations, apply theories and make informed decisions.</p>	<p>During year 4 these theories are further developed, looking at:</p> <ul style="list-style-type: none"> <li>🧪 Muscular and skeletal systems in the human body.</li> <li>🧪 Using the theories of waves to link their learning on light to sound waves.</li> </ul> <p>Students will use evidence and theories to explain the world around them when looking at animal classification, electricity and materials.</p>

## Middle school curriculum

Our science curriculum is designed to provide a progressive and iterative learning journey for pupils, building on prior knowledge and enabling them to develop a deep understanding of scientific concepts. The curriculum is carefully structured and ensures a coverage of the National Curriculum, including Biology, Chemistry, and Physics, with opportunities for interdisciplinary links. The shared and curated curriculum is coherent and ambitious; it fosters children's sense of self, place, and self-agency.

The science KS3 curriculum is built on scientific ideas, principals and key skills mapped back through the key stages. Core concepts covered at the start of KS3 are revisited throughout the course where they are applied to more complex ideas and more diverse situations, thus deepening and broadening students' understanding of the importance of science.







## Course overview

Year 5	Year 6	Year 7		Year 8
<p>Students explore a variety of areas in science in year 5 including:</p> <ul style="list-style-type: none"> <li> The human body, focusing on hormones and reproduction.</li> <li> Forces</li> <li> Astronomy</li> <li> Atoms.</li> </ul> <p>These topics allow students to link previous and present theories and explore how understanding and theories change when technology and evidence changes.</p>	<p>During year 6 Students will study the topics of:</p> <ul style="list-style-type: none"> <li> Classification</li> <li> Evolution and inheritance</li> <li> Circulatory and respiration systems.</li> </ul> <p>There are further chances to engage and light the students' curiosity with further enrichment topics.</p>	Block 1	<ul style="list-style-type: none"> <li> Particle Model</li> <li> Separation Techniques</li> <li> Cells and Organisation</li> </ul>	<ul style="list-style-type: none"> <li> Chemical Reactions</li> <li> Energy in Chemical Reactions</li> <li> Forces and Motion</li> </ul>
		Block 2	<ul style="list-style-type: none"> <li> Atoms, elements, and the Periodic Table</li> <li> Nutrition and Digestion</li> <li> Forces</li> </ul>	<ul style="list-style-type: none"> <li> Gas Exchange</li> <li> Respiration</li> <li> Waves and Sound</li> </ul>
		Block 3	<ul style="list-style-type: none"> <li> Energy Stores and transfers</li> <li> Microbes and disease</li> <li> Reproduction</li> </ul>	<ul style="list-style-type: none"> <li> Evolution</li> <li> Reactivity and Metals</li> </ul>
		Block 4	<ul style="list-style-type: none"> <li> Acids and alkalis</li> <li> Electricity</li> <li> Physical Changes</li> </ul>	<ul style="list-style-type: none"> <li> Photosynthesis</li> <li> Interdependence</li> <li> Earth and Atmosphere</li> </ul>































## Upper school curriculum

Year 9 students should build upon their foundational knowledge of middle school science with a key emphasis on GCSE preparation through exploring ideas through thoughtful discussion, implementing key vocabulary and an emphasis on practical opportunities. Our KS4 students should learn essential aspects of the knowledge, methods, processes, and uses of science. They should gain appreciation of how the complex and diverse phenomena of the natural world can be described in terms of a small number of key ideas that relate to the sciences and that are both inter-linked and of universal application.

These key ideas include:

-  The use of conceptual models and theories to make sense of the observed diversity of natural phenomena.
-  The assumption that every effect has one or more cause.
-  That change is driven by differences between different objects and systems when they interact.
-  That many such interactions occur over a distance and over time without direct contact.
-  That science progresses through a cycle of hypothesis, practical experimentation, observation, theory development and review.
-  That quantitative analysis is a central element both of many theories and of scientific methods of inquiry.

### Course overview

	Year 9	Year 10	Year 11
Term 1	 Key Concepts of Biology  Motion	<b>Edexcel combined Science <a href="#">Exam specification link</a></b> <b>Edexcel Separate Sciences: <a href="#">Biology</a> , <a href="#">Chemistry</a> and <a href="#">Physics</a> exam specification links.</b>	
		 Health and Disease  Acids and Alkalis	 Exchange and Transport  Fuels, Earth, and Atmosphere Science
Term 2	 States of Matter and Mixtures  Atomic Structure & Periodic Table	 Light and the Electromagnetic Spectrum  Calculations involving Masses, Metal  Extraction and Electrolysis	 Electric Circuits  Animal Coordination, Control and Homeostasis
Term 3	 Forces	 Radioactivity Plant Structures	 Magnetism and Motor Effect  Forces and Matter  Particle Matter
Term 4	 Cells and Control  Chemical Bonding and Types of Substances	 Forces  Doing work  Groups in periodic table, Rates of Reactions and Energy Changes	 Exam Preparation
Term 5	 Genetics Energy	 Particle Model  Ecosystems and Material Cycles	
Term 6	 Natural Selection  Waves	 Mock Revision	