

KS3 Curriculum

CURRICULUM INTENT: What does Science help young people achieve at KS3?

Students are encouraged to use their curiosity to explain how things work and to develop problem solving skills throughout the topics. Practical work is integral in supporting and developing both student knowledge and key skills. Allowing students to experience principles and phenomena directly embeds fundamental scientific concepts and processes.

We provide extra-curricular opportunities on a weekly basis and encourage cross curricula skills such as: reading for purpose, comprehension and maths skills. The skills required for scientific investigation are embedded into the lessons and link to the GCSE specification, allowing our students to feel prepared when they transition from KS3 to KS4. This includes introducing some of the GCSE Required Practicals and developing many of the skills needed to complete them.

Other key skills required for GCSE such as: A01 (acquiring knowledge), A02 (applying knowledge) and A03 (analysing information) are embedded into the KS3 curriculum. Staff have a confident understanding of these assessment objectives which allows them to support students as they develop these skills. We also work closely with the maths department to ensure consistency in teaching key maths skills. All of the work that we do with students ties in with the national curriculum and is based on the 5yr science framework developed by AQA. We also link our work to the 'Principles and big ideas in science' developed by the Association for Science Education. This means that core scientific knowledge is developed and revisited constantly throughout each stage of students' scientific development.

TERM BY TERM BREAKDOWN : Knowledge acquired and skills developed.

	Year 7 Course Outline	Year 8 Course Outline	Year 9 Course Outline	Opportunities beyond the classroom
Autumn Term	<p><i>Knowledge: variation; reproduction and growth in humans; particle model; separating mixture;, matter; forces in action; speed and gravity.</i></p> <p><i>Key Skills: introduction to practical work; how to measure quantities; how to use a Bunsen burner; risk assessment; calculations relating to forces including rearranging equations and graphing skills relating to speed calculations.</i></p>	<p><i>Knowledge: magnetic fields and electromagnets; climate and earth resources; respiration and photosynthesis; types of reactions including combustion, decomposition and energy changes in reactions.</i></p> <p><i>Key Skills: chemical equations including formula and balancing; practical skills in using magnetic fields and while investigating respiration and photosynthesis.</i></p>	<p><i>Knowledge: cells and cell transport; atomic structure and periodic table; separating mixtures; energy transfer by heating; energy and energy resources.</i></p> <p><i>Key skills: using equations; calculating magnification and energy changes; use of scientific formulae and Required Practical skills for investigating specific heat capacity.</i></p>	<p>After school Science club and STEM opportunities.</p> <p>Skills days exploring investigation skill in different contexts.</p>

Spring Term	<p><i>Knowledge: plant and animal cells including specialised cells; waves including sound and light; acids and alkalis; metal and non-metal reactions and ecosystems including interdependence and plant reproduction.</i></p> <p><i>Key Skills: use of a microscope; laws of light including investigations reflection and light; results table and graphing skills; chemical equations and practical skills including hazard symbols.</i></p>	<p><i>Knowledge: breathing and effects of chemicals on the body; digestion; contact forces and pressure; elements and the periodic table including group properties.</i></p> <p><i>Key Skills: research skills; practical skills investigating forces and pressure; lab safety and chemical equations when investigating periodic table trends.</i></p>	<p><i>Knowledge: digestion and enzymes; transport in animals and plants; communicable diseases; ionic, covalent and metallic bonding and structure Electrical energy and states of matter.</i></p> <p><i>Key skills: Required Practicals: effect of factors on enzymes; measuring IV characteristics of electrical components; maths skills; working scientifically and error and uncertainty.</i></p>	<p>After school Science club and STEM opportunities</p> <p>Science based competitions to engage students.</p>
Summer Term	<p><i>Knowledge: earth structure and the universe; electromagnets and electricity including voltage, current and resistance.</i></p> <p><i>Key Skills: physics formula and calculations; abstract thinking in relations to size of the universe and ideas of scale.</i></p> <p><i>Summer formal exams allow students to develop their AO2 and AO3 skills during revision time.</i></p>	<p><i>Knowledge: evolution and inheritance; energy cost and transfer including heat transfer.</i></p> <p><i>Key Skills: maths skills including designing results tables and graphing skills.</i></p> <p><i>Summer formal exams allow students to develop their AO2 and AO3 skills during revision time.</i></p>	<p><i>Knowledge: preventing diseases; non-communicable diseases; respiration and photosynthesis; metal extraction; acids, alkalis and bases; energy profiles and radioactivity.</i></p> <p><i>Key skills: maths skills; working scientifically.</i></p> <p><i>Key Required Practicals: effect of exercise on respiration and temperature change in chemical reactions.</i></p>	<p>After school Science club and STEM opportunities.</p> <p>Educational visits to places such as Colchester Zoo.</p>
Big ideas in Science			Key Independent Learning Resources	
<p>During KS3 students will gain a fundamental understanding that all material in the universe is made of very small particles and link this to both chemistry and physics topics including energy and the law of conservation of energy. They will learn to appreciate the vastness of the universe when discovering the composition of our solar system and neighbouring galaxies. They will use their lessons on sound, light and magnets to learn how objects can affect each other at a distance. They will link their learning on forces to how plants within our solar system stay in orbit and how gravity is a universal force of attraction. While learning about the composition of the earth they will gain an understanding the structure of the earth and how it is constantly changing through a range of processes. They will understand how the organisms that live on top of the earth are organised not just at a cellular level but also in communities and ecosystems.</p>			<p>Range of websites including BBC bitesize and YouTube channels including 'fuse school'. Tassomai SAM Learning</p>	

They will understand how new life is created and how one cell can go on to form complex organisms that compete, mate and interact with other organisms.

They will understand how genetic information is inherited allowing some species to evolve at the expense of others.

Across all three subjects they will gain an appreciation of the large impact that humans have on the Earth.