

YEAR 9 SCIENCE CURRICULUM PROGRESSION OVERVIEW

Subject Curriculum Intent

The Science curriculum is underpinned by five key elements: factual & conceptual understanding; mathematics; practical & enquiry skills; language & communication; application of knowledge & skills. These elements are used to sequence learning of the fundamental and substantive knowledge specified by the National Curriculum. In Year 9, pupils will build their fundamental knowledge whilst starting to apply previously learnt knowledge to more complex and diverse phenomena of the natural world to build their substantive knowledge.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	Growth & differentiation Light & Sound	The Periodic Table	Changing Substances Variation	Magnetism	Power	Using resources Human interaction
Core Knowledge/ Threshold Concept	Growth & differentiation – Cell specialisation, cell transport Light & Sound – Properties of light and sound, how we see and hear, reflection & refraction	The periodic table – Nuclear model of the atom, properties of groups, history of periodic table	Changing Substances – Chemical reactions & chemical equations, conservation of mass Variation – Diversity, adaptations, selective breeding, evolution & extinction	Magnetism – Attraction & repulsion, magnetic fields, electromagnets	Power – Energy and power calculations, generation of electricity	Using resources – Resources from the Earth (metals, water), life cycle assessments Human interaction – Biodiversity, effect of human activities on environment, biomass, food security
Why this learning now?	Growth & differentiation – Application of learning on cells; learning forms basis for subsequent learning on meiosis & cancer Light & Sound – Knowledge from this unit leads to a more complex understanding	The periodic table – Application of learning on fundamentals of matter; learning underpins understanding of chemical bonding and the formation of compounds	Changing Substances – Application of learning on word equations; learning crucial for future learning on quantitative chemistry, electrolysis & reactivity series Variation – Application of learning about reproduction; learning supports	Magnetism – Application of learning on contact and non-contact forces; learning underpins understanding of electromagnetic induction and the motor effect	Power – Application of learning about energy stores and energy transfers; unit provides language and conceptual understanding to be able to access further learning on electric circuits and energy	Using resources – Application of learning on separation techniques and human impact on environment Human interaction – Application of learning on interdependence; learning supports understanding of the Earth's atmosphere &

	of how waves transfer energy		understanding of human impact on biodiversity and prepares students for future learning on natural selection & speciation			importance of sustainability
Assessment Opportunities:	<p>Each unit begins with a prior knowledge check to assess key components.</p> <p>Every lesson has:</p> <ul style="list-style-type: none"> - A recall starter - Embedded AfL tasks for whole class feedback <p>Each end of unit assessment has:</p> <ul style="list-style-type: none"> - 10 marks based on recall questions & answers (given at the start of the unit) - 15 marks of multiple-choice questions <p>Students will be assessed formally three times a year – these assessments will be longer answer exam questions.</p>					
Learning at Home	<p>Homework will be set and teacher assessed once per topic (minimum). Homework will be recall based and will be a mixture of:</p> <ul style="list-style-type: none"> - Exam style questions - Quizzes, e.g. Microsoft forms, Seneca 					
Key Vocabulary	Specialisation Surface Area Reflection Refraction	Neutron Mass Number	Chemical Change Reactant Oxidation Variation Species	Magnetic Field Electromagnet	Efficient Power Renewable	Reactivity Sustainable
Spiritual, Moral, Social and Cultural concepts covered	<p>The Science curriculum provides students with the opportunity to learn about and discuss current issues in science, whilst developing their skills of enquiry and research. Students will be supported to be critical consumers of information, and will learn how to consider the relevance of where scientific information comes from, in order to assess its reliability and usefulness. More specifically, concepts covered are:</p> <p>Spiritual - Scale of universe and our significance in it, interdependence of living things, , life diversity (theory of evolution)</p> <p>Moral - Ethics in Science (our impact on our environment, medical treatments, food security, sustainable lifestyle)</p> <p>Social - Impact of science on our lives (renewable energy, ecosystems) respecting opinions, science in the news</p> <p>Cultural - Role of Scientists & their discoveries in our society</p>					
Links to careers and the world of work	<p>Each topic has a spotlight on a particular STEM role or career. This will be explored, using a guided reading approach. In Year 9, the students will learn about:</p> <p>Oceanography, Acoustic science, Fish farming, Research (cancer), Material science, Biopharmaceuticals & Music and acoustics.</p>					