

# Curriculum Intent Framework



<b>Subject:</b>	<b>Science</b>
<b>Curriculum Vision:</b>	We seek to encourage students to have a sense of curiosity and wonder at the complexity of the world around them. As Einstein famously said, “the important thing is never to stop questioning.” Our Science curriculum helps students to learn to see the world analytically through the acquisition of knowledge, development of scientific skills and the recognition that problems can be solved.

## Core Subject Values:

<b>Dignity and Respect</b>	Scientific ideas are discussed openly so that students feel valued. Our positive learning environments ensure that students have the self-belief and confidence to discuss modern issues whilst showing respect to others. We strive to instill an understanding that spiritual beliefs do not have to conflict with Scientific ideas.
<b>Wisdom, Knowledge and Skills</b>	Our curriculum provides learners with the knowledge and practice to ensure a solid foundation in scientific thinking. Robust recall processes during taught lessons, alongside state-of-the-art online learning platforms for use outside of the classroom ensure students learn and develop key skills. Opportunities are given to develop conversation around the big questions that naturally occur from Scientific enquiry.
<b>Hope and Aspiration</b>	Students are inspired by interactive lessons which include elements of linking their learning to possible careers. We set high expectations for all students and encourage self-improvement and independent learning in parallel to structured debate where students are given the tools which will allow reasoned argument within civil discourse.
<b>Extra-curricular Provision</b>	Students participate in different extra-curricular opportunities helping our young learners investigate their relationship with the world around them. We participate in events such as: STEM projects, Unilever’s Bright Future Inspire Programme, GCSE competitions such as the National Scientific Thinking Challenge, Sixth form young analyst competition and other events.

## KS3 Science Map

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 7 – taught sequentially across teacher split</b>	<p><b>X1,X3b,Y2,Y3a:</b> Biology: Cells and movement Chemistry: Particle model</p> <p><b>X2,X3a,Y1,Y3b:</b> Biology: Movement and cells Physics: Speed</p>	<p><b>X1,X3b,Y2,Y3a:</b> Chemistry: Mixtures Physics: Speed and gravity Biology: Variation</p> <p><b>X2,X3a,Y1,Y3b:</b> Physics: Gravity Chemistry: Particle model and mixtures Biology: Variation</p>	<p><b>X1,X3b,Y2,Y3a:</b> Biology: Human Reproduction Physics: Voltage and Static electricity</p> <p><b>X2,X3a,Y1,Y3b:</b> Biology: Human Reproduction Chemistry: Earth structure and universe</p>	<p><b>X1,X3b,Y2,Y3a:</b> Physics: Voltage and Static electricity</p> <p><b>X2,X3a,Y1,Y3b:</b> Chemistry: Earth structure and universe</p>	<p><b>X1,X3b,Y2,Y3a:</b> Physics: Sound</p> <p><b>X2,X3a,Y1,Y3b:</b> Chemistry: Metals</p> <p><b>Both year halves:</b> 1 week revision <b>EOY assessment</b></p>	<p><b>X1,X3b,Y2,Y3a:</b> Physics: Light Chemistry: Metals and acids</p> <p><b>X2,X3a,Y1,Y3b:</b> Chemistry: Acids Physics: Sound and light</p> <p><b>Working scientifically:</b> Scientific skills developed. Focused practical work used to prepare pupils for year 8.</p>
<b>Year 8 – taught sequentially across teacher split</b>	<p><b>X1,X3b,Y2,Y3a:</b> Biology: Breathing and digestion Chemistry: Periodic table</p> <p><b>X2,X3a,Y1,Y3b:</b> Chemistry: Periodic table and elements Biology: Breathing</p>	<p><b>X1,X3b,Y2,Y3a:</b> Chemistry: Elements Physics: Energy costs and energy transfers Chemistry: Climate</p> <p><b>X2,X3a,Y1,Y3b:</b> Biology: Digestion Chemistry: Climate and Earth's resources Physics: Energy costs</p>	<p><b>X1,X3b,Y2,Y3a:</b> Chemistry: Earths resources Physics: Contact forces and pressure</p> <p><b>X2,X3a,Y1,Y3b:</b> Physics: Energy transfers Biology: Interdependence and plant reproduction</p>	<p><b>X1,X3b,Y2,Y3a:</b> Biology: Interdependence and plant reproduction</p> <p><b>X2,X3a,Y1,Y3b:</b> Physics: Contact forces and pressure</p>	<p><b>Both halves</b> Physics: Work and heating</p> <p>Review of year 7 and 8 topics ready for EOY assessment</p>	<p><b>End of year assessments</b> Review of end of year assessments</p> <p><b>Both year halves:</b> Biology: Respiration and photosynthesis</p> <p><b>Working scientifically:</b> Scientific skills developed. Focused practical work used to prepare pupils for year 9. Buzz of learning activities.</p>
<b>Year 9 – taught in subject specialist groups</b>	<p><b>Biology:</b> Evolution <b>Chemistry:</b> Chemical energy <b>Physics:</b> Work and heating</p>	<p><b>Structured revision for internal exams</b></p> <p><b>Followed by:</b> <b>Biology:</b> Inheritance <b>Chemistry:</b> Types of reaction <b>Physics:</b> Wave properties</p>		<p><b>End of KS3 assessments</b></p> <p><b>Review of end of year assessments</b> Key gaps/misconceptions addressed in preparation for KS4</p> <p><i>Starting KS4 transition content</i></p>	<p><i>Starting KS4 transition content to end of year</i> <b>Biology:</b> Cell biology <b>Chemistry:</b> Atomic structure and the periodic table <b>Physics:</b> Energy</p>	

## KS4 Science Combined Science

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Year 10</b>	<p>Biology: Organisation</p> <p>Chemistry: Chemical analysis Structure and bonding</p> <p>Physics: Electricity</p>	<p>Biology: Organisation Infection and response</p> <p>Chemistry: Structure and bonding</p> <p>Physics: Electricity</p>	<p>Biology: Infection and response</p> <p>Chemistry: Quantitative chemistry</p> <p>Physics: Particle model</p>	<p>Biology: Bioenergetics</p> <p>Chemistry: Chemical changes</p> <p>Physics: Atomic structure</p>	<p>Biology: Bioenergetics Ecology</p> <p>Chemistry: Energy changes</p> <p>Physics: Waves</p>	<p>Consolidation of paper 1 content</p> <p>Revision and misconceptions addressed</p> <p>EOY exam</p>
<b>Year 11</b>	<p>Biology: Ecology Homeostasis</p> <p>Chemistry: Rates and organic chemistry</p> <p>Physics: Forces</p>	<p><b>Internal PPE exams for all students</b></p> <p>Biology: Homeostasis and inheritance</p> <p>Chemistry: Chemical analysis</p> <p>Physics: Forces</p>	<p>Biology: Inheritance</p> <p>Chemistry: Atmosphere and resources</p> <p>Physics: Magnetism</p>	<p><b>Internal PPE exams for all students</b></p> <p>Consolidation of paper 2 content</p> <p>Revision and misconceptions addressed</p>	<p>GCSE Examinations and Preparation</p>	<p>GCSE Examinations and Preparation</p>

## KS4 Science Separate Science

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Year 10</b>	<p>Biology: Organisation</p> <p>Chemistry: Structure and bonding</p> <p>Physics: Electricity</p>	<p>Biology: Infection and response</p> <p>Chemistry: Quantitative chemistry</p> <p>Physics: Electricity</p>	<p>Biology: Bioenergetics</p> <p>Chemistry: Chemical changes</p> <p>Physics: Particle model</p>	<p>Biology: Consolidation of paper 1 content Ecology</p> <p>Chemistry: Energy changes Consolidation of paper 1 content</p> <p>Physics: Atomic structure</p>	<p>Biology: Ecology</p> <p>Chemistry: Rates</p> <p>Physics: Waves</p>	<p>Consolidation of paper 1 content</p> <p>Revision and misconceptions addressed</p> <p>EOY exam</p> <p>Physics: Space self-learning project</p>
<b>Year 11</b>	<p>Biology: Homeostasis</p> <p>Chemistry: Organic chemistry</p> <p>Physics: Forces</p>	<p><b>Internal PPE exams for all students</b></p> <p>Biology: Homeostasis and inheritance</p> <p>Chemistry: Chemical analysis</p> <p>Physics: Forces</p>	<p>Biology: Inheritance</p> <p>Chemistry: Atmosphere and resources</p> <p>Physics: Magnetism and Space</p>	<p><b>Internal PPE exams for all students</b></p> <p>Consolidation of paper 2 content</p> <p>Revision and misconceptions addressed</p>	<p>GCSE Examinations and Preparation</p>	<p>GCSE Examinations and Preparation</p>

## KS5 Biology

	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Year 12</b>	<p>Teacher 1: Topic 1 Biological Molecules 1.1-1.4</p> <p>Teacher 2: Topic 2: Cells and Viruses 2.1-2.2</p>	<p>Teacher 1: Topic 1 Biological Molecules 1.4-1.6</p> <p>Teacher 2: Topic 2: Cells and Viruses 2.3-2.5</p>	<p>Teacher 1: Topic 4 Exchange and transport 4.1-4.3</p> <p>Teacher 2: Topic 3: Classification 3.1-3.3</p>	<p>Teacher 1: Topic 4 Exchange and transport 4.4-4.5</p> <p>Teacher 2: Core Practicals</p>	<p>Consolidation of AS Biology.</p> <p>Review of CPACs and preparation for end of year assessment</p>	<p>Teacher 1: Topic 6 Microbiology and Pathogens</p> <p>Teacher 2: Topic 10 Ecosystems</p>
<b>Year 13</b>	<p>Teacher 1: Topic 6 Microbiology and Pathogens 6.1-6.2</p> <p>Teacher 2: Topic 10 Ecosystems</p>	<p>Teacher 1: Topic 7 Modern Genetics</p> <p>Teacher 2: Topic 5 Energy for Biological Processes</p>	<p>Teacher 1: Topic 8 Origins of Genetic Variation</p> <p>Teacher 2: Topic 9 Chemical control in mammals and plants/ mammalian Nervous system</p>	<p>Teacher 1: Topic 8 Origins of Genetic Variation</p> <p>Teacher 2: Topic 9 Mammalian nervous system and Homeostasis</p>	A-level Examinations and Preparation	

## KS5 Chemistry

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 12</b>	Teacher 1: Atomic Structure  Teacher 2: Bonding	Teacher 1: Amount of substance Energetics  Teacher 2: Kinetics Introduction to organic	Teacher 1: Equilibria  Teacher 2: Alkanes Halogenoalkanes	Teacher 1: Redox Periodicity  Teacher 2: Alkenes Alcohols	Teacher 1: Redox Periodicity  Teacher 2: Mass Spec and IR	Consolidation of AS Chemistry.  Review of CPACs and preparation for end of year assessment
<b>Year 13</b>	Teacher 1: Rates of reaction  Teacher 2: Isomerism and aldehydes and ketones	Teacher 1: Thermodynamics  Teacher 2: Carboxylic acids and aromatic chemistry Nitrogen chemistry (amines, polymers)	Teacher 1: Acids and bases  Teacher 2: Nitrogen chemistry (amines, polymers) NMR Electrochemical cells	Teacher 1: Reactions of ions in aqueous solutions  Teacher 2: Transition metals	A-level Examinations and Preparation	

## KS5 Physics

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 12</b>	Both: Measurements and their errors  Teacher 1: Wave phenomena  Teacher 2: Particles and radiation	Teacher 1: Wave phenomena  Teacher 2: Particles and radiation	Teacher 1: Electricity  Teacher 2: Mechanics	Teacher 1: Electricity  Teacher 2: Mechanics	Teacher 1: Electricity  Teacher 2: Materials	Teacher 1: Thermal Physics  Teacher 2: Further mechanics
<b>Year 13</b>	Teacher 1: Further mechanics  Teacher 2: Thermal Physics / Fields and their consequences	Teacher 1: Nuclear Physics/ Astrophysics  Teacher 2: Fields and their consequences	Teacher 1: Astrophysics  Teacher 2: Fields and their consequences	A-level Examinations and Preparation <ul style="list-style-type: none"> <li>• In depth PPE review</li> <li>• Exempla answers using printed past papers</li> <li>• Review of required practical work and measuring techniques</li> <li>• Focused work on uncertainty as a key aspect of revision</li> </ul>		