# Science at Coombe Wood School

| Subject Vision Statement |
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| Our Science Department champions the disciplinary values of **curiosity, evidence-based reasoning**, and **analytical thinking**. Through a rigorous and thoughtfully sequenced curriculum across Biology, Chemistry, and Physics, we develop students' **scientific literacy** and empower them to understand and engage with the world.<br><br>Science uniquely enriches secondary education by fostering **critical inquiry, problem-solving**, and a **deep understanding** of the natural and physical world. Our curriculum is built around core concepts such as the scientific method, systems and models, cells, energy, matter, and change—selected for their power to explain phenomena, build conceptual understanding, and connect across disciplines.<br><br>Across our 7 year curriculum we provide a coherent journey from foundational knowledge to advanced understanding, recognising varied starting points and guiding all students toward ambitious end goals. Assessment is woven throughout our curriculum to monitor progress, address misconceptions, and inform responsive teaching, ensuring that every student is supported and challenged appropriately as they move towards mastery. Assessment uses past paper questions, demonstration of practical skills and their application.<br><br>By equipping students with the knowledge and skills to question, evaluate, and draw informed conclusions, we prepare them not only for academic success but to thrive as engaged, scientifically literate citizens. |

| Curriculum Map: Long Term Plan | | | | | | |
|---|---|---|---|---|---|---|
| | Autumn | | Spring | | Summer | |
| | Term 1 | Term 2 | Term 1 | Term 2 | Term 1 | Term 2 |
| 7 | Particles and Energy | Lab Skills and Chemistry | Human Body Part 1 | Sound and Light | Reproduction in Animals and Plants | Plants and Ecosystems |
| 8 | HUman Body Part 2 | Forces and Space | Variation and Adaptations | Conservation of Mass and Reactivity | Electricity and Magnetism | Earth and Climate |
| 9 | Cell Biology KS3 | Earth, Atmosphere and Materials | Energy KS3 | Atomic Structure and Periodic Table KS3 | Ecology KS3 | Energy Changes |
| 10 | B: Cells & Organisation<br>C: Atomic structure and Periodic table<br>P: Energy | B: Organisation (Plants)<br>C: Bonding<br>P: Electricity | B: Disease<br>C: Quantitative chemistry<br>P: Particle Model | B: Disease<br>C: Chemical changes Pt 1<br>P: Radioactivity | B: Organisation (Animals)<br>C: Chemical changes Pt 2<br>P: Forces | B: Ecology<br>C: Energy changes and Rates<br>P: Forces |
| 11 | B: Homeostasis<br>C: Equilibrium and Organic Chemistry<br>P: Waves | B: Inheritance<br>C: Chemical Analysis<br>P:Electromagnetism | B: Variation and Evolution<br>C: Chemistry of the Atmosphere<br>P: Energy Review | B: Exam Preparation<br>C: Using Resources<br>P: Exam Preparation | B: Exam Revision<br>C: Exam Revision<br>P: Exam Revision | |

| Physics A LevelCurriculum Map: Long Term Plan | | | | | | |
|---|---|---|---|---|---|---|
| | Autumn | | Spring | | Summer | |
| | Term 1 | Term 2 | Term 1 | Term 2 | Term 1 | Term 2 |
| 12 | Materials and Mechanics | Electricity and Mechanics | Waves and Forces | Quantum Physics and Forces | Year 1 Consolidation | Fields |
| 13 | Capacitors and Fields | Nuclear Physics and Medical Physics | Circular Motion and Oscillations | Thermal Physics and Astrophysics | Exam Preparation | |

| Biology A Level Curriculum Map: Long Term Plan | | | | | | |
|---|---|---|---|---|---|---|
| | Autumn | | Spring | | Summer | |
| | Term 1 | Term 2 | Term 1 | Term 2 | Term 1 | Term 2 |
| 12 | Cells | Biological molecules | Organisms exchange substances with their environment | Energy transfers in and between organisms | Genetic information, variation and relationships between organisms | Productivity |
| 13 | Bioenergetics | Organisms respond to changes in their internal and external environment. | Inheritance Genetics | Genetics and the control of gene expression | Populations, evolution and ecosystems. | |

| Chemistry A Level Curriculum Map: Long Term Plan | | | | | | |
|---|---|---|---|---|---|---|
| | Autumn | | Spring | | Summer | |
| | Term 1 | Term 2 | Term 1 | Term 2 | Term 1 | Term 2 |
| 12 | Amounts of Substance<br>Atomic Structure<br>Bonding and Intermolecular Forces | Periodicity<br>Group 2 Chemistry<br>Group 7 Chemistry<br>REDOX | Intro to Organic Chemistry<br>Alkanes<br>Kinetic | Haloalkanes<br>Alcohols<br>Energetics | Organic Analysis<br>Optical Isomerism<br>Chemical Equilibria and Kc | Aldehydes and Ketones |
| 13 | Thermodynamics<br>Aromatic Chemistry<br>Carboxylic Acids and Derivatives<br>Chromatography | Rate Equations<br>Amines<br>Polymers<br>Biochemistry<br>Organic Synthesis | Equilibrium and Kp<br>Transition metals<br>Reactions of aqueous solutions | Acids and Bases<br>Period 3<br>Electrochemistry | Acids and bases<br>Electrochemistry<br>Revision | |