



# SCIENCE ENDPOINTS

## AN AMBITIOUS CURRICULUM

| By the end of Year 8, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | By the end of Year 10, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | By the end of Year 11, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p><b>Biology</b></p> <ul style="list-style-type: none"> <li>Describe the <b>structure and function of cells</b>, tissues, and organs.</li> <li>Explain <b>reproduction in humans and plants</b>, including puberty and fertilisation.</li> <li>Understand <b>nutrition, digestion, respiration, and the circulatory system</b>.</li> <li>Describe <b>microbes, disease, and immunity</b>.</li> <li>Explore <b>interdependence, ecosystems, and adaptations</b>.</li> </ul> <p><b>Chemistry</b></p> <ul style="list-style-type: none"> <li>Understand the <b>particle model</b>, including states of matter and changes of state.</li> <li>Explain <b>elements, compounds, mixtures</b>, and methods of separation.</li> <li>Describe the structure of the atom and <b>the periodic table</b>.</li> <li>Understand the basics of <b>chemical reactions</b>, acids and alkalis, and indicators.</li> </ul> | <p><b>Biology</b></p> <ul style="list-style-type: none"> <li>Describe <b>cell structure</b>, including prokaryotes and eukaryotes.</li> <li>Explain <b>cell division, transport, and organisation</b>.</li> <li>Understand <b>infection and response</b>, including vaccination and antibiotics.</li> <li>Study <b>bioenergetics</b>, photosynthesis, and respiration.</li> <li>Begin work on <b>homeostasis and response</b>.</li> </ul> <p><b>Chemistry</b></p> <ul style="list-style-type: none"> <li>Understand <b>atomic structure, periodic trends</b>, and isotopes.</li> <li>Explain <b>chemical bonding</b> (ionic, covalent, metallic).</li> <li>Use the <b>reactivity series</b> and explain extraction of metals.</li> <li>Perform and interpret <b>chemical reactions</b>, including acids, bases, salts.</li> <li>Apply understanding of <b>quantitative chemistry</b> (moles, equations, yield).</li> </ul> <p><b>Physics</b></p> | <p><b>Biology</b></p> <ul style="list-style-type: none"> <li>Explain systems of <b>homeostasis</b>, including control of blood sugar and temperature.</li> <li>Describe <b>nervous and endocrine systems</b> and their coordination.</li> <li>Understand <b>inheritance, variation, evolution</b>, and the role of DNA and genes.</li> <li>Explore <b>ecology</b>, including cycles, biodiversity, and human impact.</li> </ul> <p><b>Chemistry</b></p> <ul style="list-style-type: none"> <li>Describe <b>rates of reaction</b>, catalysts, and equilibrium (Le Chatelier's principle).</li> <li>Explain <b>organic chemistry</b>: hydrocarbons, fractional distillation, cracking.</li> <li>Understand <b>chemical analysis</b> techniques (e.g., chromatography, gas tests).</li> <li>Describe <b>chemistry of the atmosphere</b>, evolution of gases, and pollution.</li> </ul> |

| By the end of Year 8, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | By the end of Year 10, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | By the end of Year 11, students will be able to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| <ul style="list-style-type: none"> <li>Begin applying <b>word and symbol equations</b>.</li> </ul> <p><b>Physics</b></p> <ul style="list-style-type: none"> <li>Explain <b>energy types, transfers, and conservation</b>.</li> <li>Understand <b>forces and motion</b>, including gravity and friction.</li> <li>Explore the basics of <b>electricity and magnetism</b>.</li> <li>Understand <b>waves</b> (light and sound), including reflection, refraction, and hearing.</li> </ul> <p><b>Scientific Skills</b></p> <ul style="list-style-type: none"> <li>Plan and carry out <b>basic investigations</b> using correct equipment and safety.</li> <li>Record and present results using tables and graphs.</li> <li>Draw simple <b>conclusions and evaluations</b> from data.</li> <li>Use scientific vocabulary and basic calculations (e.g., speed, density, pH).</li> </ul> | <ul style="list-style-type: none"> <li>Describe <b>energy stores and transfers</b>; calculate energy efficiency.</li> <li>Understand <b>electrical circuits</b>, resistance, and power.</li> <li>Describe <b>particle model of matter</b> and changes of state.</li> <li>Understand <b>atomic structure</b>, including radiation types and uses.</li> </ul> <p><b>Scientific Skills</b></p> <ul style="list-style-type: none"> <li>Plan and carry out <b>GCSE-required practicals</b>.</li> <li>Use <b>scientific models, equations, and data</b> to solve problems.</li> <li>Begin evaluating <b>methodologies, results, and experimental errors</b>.</li> </ul> | <ul style="list-style-type: none"> <li>Explore <b>using Earth's resources</b> sustainably (e.g., water, metals, life cycle assessments).</li> </ul> <p><b>Physics</b></p> <ul style="list-style-type: none"> <li>Explain <b>forces and motion</b>, Newton's laws, stopping distances.</li> <li>Understand <b>waves</b>, the electromagnetic spectrum, and wave behaviour.</li> <li>Explore <b>magnetism and electromagnetism</b>, motors, and transformers.</li> <li>Complete understanding of <b>space physics</b> (if entered for Triple Science).</li> </ul> <p><b>Scientific Skills</b></p> <ul style="list-style-type: none"> <li>Demonstrate confidence in applying <b>practical skills and mathematical techniques</b> across disciplines.</li> <li>Evaluate evidence, draw conclusions, and <b>critically analyse experimental design</b>.</li> <li>Use scientific vocabulary, data interpretation, and exam-style reasoning.</li> </ul> |
| <p>In Year 8, students build on the foundations laid in Year 7 with a curriculum that introduces key GCSE concepts earlier than the national curriculum expects. Scientific disciplines are taught discretely—Biology, Chemistry, and Physics—fostering a deeper conceptual understanding and preparing learners for the structure and expectations of Key Stage 4. Topics such as cellular structure, reproduction, energy systems, and chemical reactions are</p>                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Year 10 marks the first formal year of GCSE preparation, where students follow the AQA Combined Science: Trilogy pathway. MEPA Academy's curriculum goes beyond national expectations by embedding strong cross-topic links, rigorous scientific literacy, and frequent retrieval practice to secure long-term understanding. All required practicals are delivered with precision and revisited with increasingly independent analysis. Students</p>                                                                                                                                                                                                          | <p>In Year 11, MEPA Academy's science curriculum emphasises mastery, application, and real-world relevance. Students consolidate all GCSE content through structured revision, frequent low-stakes testing, and deliberate practice of higher-tier exam skills. Teachers use targeted interventions and model exam responses to support all learners, including those working towards top grades. Scientific ideas are interleaved and revisited across</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| <p>covered with increased complexity. Students engage with practical work that mirrors GCSE methodology, including graph interpretation and basic data evaluation. The emphasis on scientific vocabulary, structured thinking, and enquiry-based learning ensures that by the end of Year 8, pupils are already beginning to think and work like scientists.</p> | <p>are explicitly taught the mathematical skills underpinning science—such as standard form, ratio, and rearranging equations—raising their confidence in applying calculations to real-world contexts. Practical work is enriched with reflective tasks and career connections, ensuring students not only understand the science, but also its significance in the wider world.</p> | <p>disciplines, encouraging students to think critically and make synoptic connections. Required practicals are revisited with evaluative discussions and written reflections. Pupils are also exposed to ethical issues, emerging scientific developments, and STEM career pathways, ensuring they leave with not just qualifications, but also with the confidence, knowledge, and cultural capital to thrive in post-16 science and beyond.</p> |