**Y10 – Combined Science SYNERGY (Life & Environment)**

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | | Summer 1 | Summer 2 |
| Big Ideas | S1 – \*Building blocks | S1*(cont)* -\* Building blocks  S2 – \*Transport over larger distances | S2 *(cont) – \**Transport over larger distances  S3 –\* Interaction with the environment | S3 *(cont)* – \*Interaction with the environment  S4 – \*Explaining change | | S4 *(cont)* – \*Explaining change  S5 – \*Building blocks for understanding  S6 –\* Interaction over small and large distances | S6 *(cont)* – \*Interaction over small and large distances |
| Topics | S1a – States of matter  S1b – Atomic structure  S1c – Cell biology | S1d – Waves  S2a – Systems in the human body  S2b – Plants and photosynthesis | S2b *(cont)* – Plants and photosynthesis  S3a – Lifestyle and health  S3b – Radiation and risk | S3c – Preventing, treating, and curing disease  S4a – The Earth’s atmosphere  S4b – Ecosystems and biodiversity  S4c – Inheritance and variation | | S4c – Inheritance and variation  S5a – The Periodic Table  S5b – Chemical quantities  S6a – Forces and energy changes | S6b – Structure and bonding  S6c – Magnetism and electromagnetism |
| Skills | DEVELOPMENT OF SCIENTIFIC THINKING  - Understanding how scientific theories develop over time  - Use a variety of models to represent ideas (2D & 3D forms)  - Appreciate ethical issues  - Describe and evaluate methods  - Recognise the importance of peer review | | EXPERIMENTAL SKILLS & STRATEGIES  -Plan investigations  - Carry out investigations  - Describe and suggest techniques  - Mathematical and statistical analysis | | | APPARATUS & TECHNIQUES  -Use a range of equipment to take measurements  - Safe use of heating equipment  - Equipment measuring forces  - Use a range of equipment to observe biological changes, chemical reactions and determining motion and speed  -Safe and ethical use of living organisms  - Observations of waves and fluids  - Measure energy changes  - Safely use a microscope  -Range of separation techniques  - Safe use of gases and reagents | |
| Assessment | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments | | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments  LIFE & ENVIRONMENT END OF YEAR ASSESSMENT |
| Linked learning | Students will build on knowledge and skills developed in Key Stage 3 for each topic area. Scientific practical skills are further developed, along with scientific literacy and numeracy. Learning components at the start of the lesson remind students of prior learning and point out links to previous topics.  Links with other subjects: Maths and chemistry – calculations, rearranging equations, basic mathematical functions, and graph drawing. PE, Health & social care and PSHE – life processes, organ systems, the human body, contraception. Geography – Earth’s atmosphere and life cycle assessments | | | | | | |
| \*SMSC Links | 253 Provision for the spiritual development of pupils includes developing their:  - ability to be reflective about their own beliefs and perspective on life  - sense of enjoyment and fascination in learning about themselves, others, and the world around them,  - Use of imagination and creativity in their learning  254 Provision for the moral development of pupils includes developing their:  -understanding of the consequences of their behaviour and actions  - interest in investigating and offering reasoned views about moral and ethical issues and ability to understand and appreciate the viewpoints of others on these issues | | | | | | |
| Literacy | Scientific vocabulary, terminology, and definition  Interpret observations, write conclusions, describe, and explain common concepts, compare and evaluate | | | Numeracy | Use decimal forms, standard form, ratios, fractions, percentages, makes estimates, uncertainties, determining quantities, SI units, convert units.  Handling data; interpret data, significant figures, construct tables and graphs, order of magnitude, scatter diagrams  Algebra: use common expressions, solve simple algebraic equations, rearrange equations, substitute numbers  Graphs: translate information between tables and graphs, understand linear relationships, plot variables, calculate surface area and volume | | |
| Enrichment | Period 6 CLIMB sessions.  Developing STEM ambassador visitors to engage and inspire students.  GCSE Science Live Trip | | | | | | |
| Impact | Students are required to memorise key facts and be able to recall them and apply their knowledge to real life situations. A successful student will be able to link concepts together. Demonstrate the ability to work scientifically by following a method, identifying basic apparatus, collecting data, illustrating data, and drawing conclusions. Science will help students to become logical thinkers and problem solvers with a batter understanding of the world around them. Demonstrating resilience and the ability to consider moral and ethical implications of scientific developments. | | | | | | |

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| Ways to support student learning in this subject |
| * Encourage the completion of homework. * Encourage discussion of science issues that arise in the news. * Discuss science lessons and their progress. * Encourage a positive attitude towards science. * Encourage self-assessment and reflection using personalised learning checklists (PLCs) * Refer to the Periodic Table * Practice units, unit conversions, standard form, rearranging equations and encourage the use of a calculator * Learn Physics equations * Use of low stakes questioning and exam material to build confident and knowledge base * Encourage students to use GCSEPod to consolidate knowledge and build on recall skills * Refer students to LaunchPad revision materials * Purchase CGP revision guides and workbooks for independent revision and practice |