**Y11 – Separate Science (Biology)**

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | | Summer 1 | Summer 2 |
| Big Ideas | B7b – \*Ecology | B7b *(cont)* – \*Ecology | Re-teaching of Paper 1 | Re-teaching of Paper 1 | | Re-teaching of Paper 2 |  |
| Topics | Biodiversity  Trophic levels  Transfer of biomass  Pollution  Global Warming | Deforestation  Maintaining diversity  Food security  Biotechnology | Topics based on progress over time for each class personalised by teacher | Topics based on progress over time for each class personalised by teacher | | Topics based on progress over time for each class personalised by teacher |  |
| Skills | DEVELOPMENT OF SCIENTIFIC THINKING  - Understanding how scientific theories develop over time  - Use a variety of models to represent ideas  - 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  - Sampling techniques  - Use a range of equipment to observe biological changes,  -Safe and ethical use of living organisms  - Measure rates of reaction of biological processes  - Safe use of biological 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  Paper 1 PPE | 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  Paper 2 PPE | | Formative assessment every lesson.  Range of learning & skill-based homework.  Synoptic end of unit assessments  Terminal assessments |  |
| Linked learning | Year 11 Biology builds on prior knowledge by spiralling the topics previously learnt in years 9 and 10 such as cells, activity transport, osmosis, diffusion, and photosynthesis. GCSE content builds on the knowledge gained at KS3. 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 – 20% of the science GCSE is numeracy based around fractions, standard form, and basic maths. Tabulation and analysis of data. English – Literacy link, scientific terminology, command words, comprehension, and reading and extended writing. Chemistry – Greenhouse gases, global warming, and air pollution. | | | | | | |
| 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,  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, probability  Handling data: interpret data, significant figures, construct tables and graphs, order of magnitude, scatter diagrams, calculate means, mode and median  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  Biology challenge | | | | | | |
| 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) * Practice units, unit conversions, standard form, rearranging equations and encourage the use of a calculator * Use of low stakes questioning and exam material to build confidence 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 |